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ATMOSPHERIC AEROSOLS
BETWEEN 700 AND 3000 m ABOVE SEA LEVEL
PART V

A Study of the Effects of Atmospheric Fine Structure Characteristics on the Vertical Distribution of Aerosols

FINAL TECHNICAL REPORT

by

Reinhold Reiter

Rudolf Sládkovič

and

Walter Carnuth

July 1971

EUROPEAN RESEARCH OFFICE

United States Army

Contract Number DAJA-37-70C-2647

Physikalisch-Bioklimatische Forschungsstelle
der Fraunhofer-Gesellschaft
81 Garmisch-Partenkirchen, Germany
Skistadion

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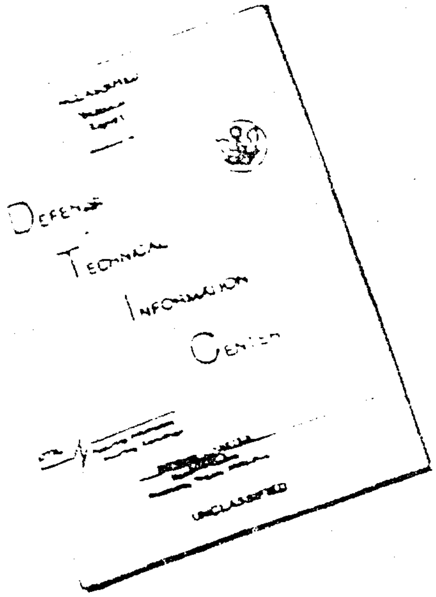

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ABSTRACT

Our research work for the purpose of studying vertical aerosol exchange up to 3000 m a.s.l., which was explained in our previous reports, has consistently been carried on. It comprises the obtaining, to the extent possible, of uninterrupted recording data, on the one hand, and, on the other, the development of appropriate methods of electronic data processing and their application toward the derivation, for practical utilization, of relations between aerological parameters and the incremental exchange coefficient. Following are details on the investigations conducted:

Obtaining of Data: Continuous recording of RaB and RaC at 700 m, 1800 m, and 3000 m a.s.l.; computation of the main vertical exchange coefficients for the strata between these levels, and computation of the ionization rate profile. Recording of air conductivities and of the concentration as well as the particle size spectrum of Aitken nuclei at the same levels. Application of these data for computing the vertical profiles of the Aitken nucleus profiles, from the soundings of air conductivities between the said levels. Performance of more than 400 soundings between 700 m and 1800 m a.s.l., and more than 1000 soundings between 1000 m and 3000 m a.s.l., by means of the cable car telemetry systems, for obtaining the profiles of the following parameters: wind velocity, temperature, humidity, polar air conductivities, and potential gradient. Application of the profiles of aerosol particle concentration as computed from the air conductivity profiles, for computing the profile of the incremental exchange coefficients.

Data Handling: Development of computer programs for automatic computation, from the said recordings, of all essential parameters and their altitude dependence; automatic transfer of the data to parameter data tables.

Scientific Processing of Data: Derivation of significant statistical relations between aerological data such as gradients of temperature, of potential and equivalent potential temperatures, of vapor pressure, on the one hand, and the incremental exchange coefficients, on the other. Detailed analyses to investigate the interrelations between all essential parameters, and to deduce appropriate principles of classification as a basis for future improved statistical data processing.

In the appendix, numerous graphs, copies of original recordings, and parameter data tables illustrate the relations found, up to now, and afford a glimpse into our analysing workshop. The most important computer program is printed out in full.

The narrative portion is concluded by a preview of advanced studies intended for the near future.

I. OBJECTIVES AND BACKGROUND

Our investigations carried out during the period from 1 July 1970 until 30 June 1971 are based upon the preparatory work of the preceding years of operation. The fundamental problem of the current investigations which have been greatly expanded, instrumentation-wise, by the telemetry system aboard the Zugspitze cable car, has been expounded in detail in the preceding report (1) and in a publication (2). It is assumed, therefore, that a reiteration of the final objective of our research may here be dispensed with. Earlier and more recent literature references to be considered have been thoroughly discussed in (1,2), also. New publications by other scientists of any importance have not since been added.

The subject to be presented, however, in this chapter is how does the work performed during the reporting period differ significantly from that of the preceding period up to the middle

of 1970. During the latter it was our objective (a) to shield the cable car telemetry systems against all effects of the weather and to obtain by them homogeneous series of recordings; (b) to develop and apply the physical and mathematical bases for the complete numeric evaluation of the recording runs, up to and including computation of the incremental exchange coefficients; (c) to continually record at the three stations the Aitken nuclei concentrations, natural radioactivity (RaB, RaC), and polar conductivities, and to utilize them in the evaluations; and (d) to derive initial deductions from the results.

The performance of evaluating operations was predominantly based on manual processes. However, certain phases of the computations, e.g. those of Aitken nucleus concentration from the total electric conductivity of the air, and of the incremental exchange coefficients from the vertical gradients of the conductivity data, were already performed electronically with the Hewlett Packard desk computer.

Now, during the reporting period of 1 July 1970 through 30 June 1971, the entire evaluation technique was completely changed. A new computer (Intertechnique Multi 8) with 12 k words (1 word = 9 bit) affords us the possibility to perform the entirety of all computation processes in one single operation, and to print them out in tables. A considerable portion of the time, however, had to be used to develop computer programs, to test them and adopt them to the computation problem in all details. The newly acquired accessory equipment such as fast reader and fast tape perforator afforded new possibilities to optimize the computation work, however, initially required time consuming conversions of the computer programs. Furthermore, it was necessary to transfer our stock of primary data, i.e. the crude data read from the recordings, on punch tapes by means of teletype, and do this both retroactively to the greatest extent possible, and continually up until they were caught up actu-

ally with the daily soundings.

Hence, there was only a relatively short period left for a thorough statistical processing of the data material as the same can only be based upon the final tables from the computer. Nevertheless, it is possible in this report to convey some interesting - tentative - results. These as well as the detailed analyses described below are in this case based upon Zugspitze cable car soundings only. Analog processing of the Wank cable car soundings will be done later. Also the vertical wind profiles recorded by both systems shall be considered at a later date.

It is by no means gratifying to merely process the data obtained statistically, "blindly", as it were. Such a "blind statistics" is even bound - if solely relied on - to lead on to wrong tracks and into incomplete knowledge. It is rather an indispensible necessity to analyse in detail and "individually", such series of soundings as belong together. Only from such practice, i.e. from an undeniably time consuming detailed analysis, grows the foundation of experience upon which a meaningful and successful statistical evaluation may be based. Part of this report will, therefore, deal with the initial results of such detail analyses.

Our long-range objective is - beside the continuation of the soundings, computer work, and detailed analysis - (1) a complete synopsis of the existing interrelations, and (2) solution of the problem to render the disclosed interrelations applicable for practical use.

II. OBTAINING OF DATA

1. Technical Facilities

a) Cable Car Telemetry Systems

During the reporting period the telemetry system in the Wank cable car was working without any troubles. In order to obtain data by it which are comparable in every respect to those obtained by the Zugspitze cable car system, the arrangement of the instruments in the bottom of the Wank cable car was changed. The inlet tube for the measuring air flow was assimilated to that of Zugspitze cable car in length, diameter and position relative to the body of the car.

To begin with, the telemetry system of the Zugspitze cable car required some further improvements.

Due to the large altitudinal difference traversed, condensation would occur occasionally on some of the sensitive electronic parts such as resistors of extremely high ohmic value. We therefore had to resort to installing those parts into sealed cartridges which are kept dry inside through anhydrous CaO. This solved the problem, and even the most severe weather conditions during the run or during waiting period at Zugspitze peak no longer affected the functioning of the unit.

Furthermore, it was possible to completely eliminate a disturbing sensitivity of the cable car equipment as well as the relay station at St. Martin's, to nearby lightning strokes; so, interesting recordings are now available from inside the thunderclouds.

Both systems have repeatedly been tested, calibrated and compared with one another in the laboratory.

b) Recordings of Natural Radioactivity in the Air (Concentration of RaB and RaC).

Recordings of RaB and RaC concentrations at the 3 stations were made without interruption, evaluated and utilized within the scientific program. This was done, on the one hand, by computing the mean vertical exchange coefficients between 700/1800 m and 1800/3000 m a.s.l., and on the other hand by using the data in computation of the ionization rate. The results of the recordings for the reporting period are compiled in X. Appendix, Section 4.

c) Recording of Aitken Nuclei Concentration at the Stations.

Aitken nuclei concentration and particle size distribution within the Aitken nuclei range were recorded at the two stations of Wank peak and Garmisch-Partenkirchen without any interruptions or disturbances. All data have been continually analyzed. These (and many other) data are picked up and processed at the latter station by our electronic computer system. Apart from basic research studies on Aitken nuclei and their behavior, these data are primarily used as a basis at 700 m and 1800 m a.s.l., for the conversion of total conductivities into nuclei concentrations.

A new Aitken nuclei counter of the make Environment/one, USA, was installed and put into operation at the Zugspitze station. This unit is smaller and lighter than the GE units, which is essential for operation at Zugspitze peak with the limited space available. But despite considerable expenditure of repair and reequipment efforts, it unfortunately was not yet possible to obtain homogenous recording series over more than a few weeks.

d) Recording of Polar Conductivities and Space Charge Densities at the Stations.

During the reporting period, instruments were put into operation for the recording of polar conductivities and space charge densities at 1800 m a.s.l. (Wank peak) and 700 m (valley floor). From the terminals of our cable car recording range, they furnish data, continuous in time, for direct comparison and link-up. The instruments are functioning satisfactorily, even under bad weather condition. The equipment that had been previously installed at Zugspitze peak has, without interruption, been yielding recorded data which have been evaluated.

e) Numerical Processing of Recorded Data

The methods of numerical processing of recorded data are outlined in (1,2).

2. Volume of Processed Data

From 1 July 1970 through 31 May 1971, we made

413 recording runs by Wank cable car telemetry system

and 1,015 recording runs by Zugspitze cable car telemetry system.

The manual evaluation operations that were still necessary have all been completed.

During the same period 380 Wank cable car and 900 Zugspitze cable car runs were transferred to punch tapes and mathematically analyzed by computer. The final results are printed out in tabulated form. Based on the fact that each run yields roughly 500 individual data, our file presently comprises 650,000 data.

III. DATA PROCESSING

1. The Physical-Mathematical Fundamentals for Data Processing

The physical-mathematical computation operations are described in every detail in (1), Chapter IV (also cf (2)). They were retained in every detail, hence there is no need for reiteration here.

2. Brief Description of the Overall Procedure of Technical Data Processing

Processing of the data, starting with transfer from the moving cable car up to the print-out of the completed tables is shown in Fig.1.

The sensors and the transmitter on the running cable car transmit the measured values to the receiver in codified form and in the known manner. Thereupon follows the electronic decoding of the data and their analog recording on three xy-recorders. The y-channel of each of the three recorders is fed with the analog pressure signal as parameter of altitude. The x-channels are occupied by the analog data for polar air conductivities, wet and dry temperatures and potential gradient + wind speed. The three record sheets obtained per sounding are then subject to intermediate manual processing: the relative values are read off at the main levels (vertical intervals of 100 or 200 m) and at the secondary levels in between. These secondary levels are determined by the processing scientist, based upon the given aerological fine structures of the soundings. These relative values are then compiled in a work chart (intermediate table) per sounding. Thereupon, they are punched (per sounding) on an 8-channel punch tape by means of a teletypewriter. These tapes are then checked for errors (omissions, wrong signs, logical errors) with the aid of a test program; defective tapes are corrected (rate of errors not in excess of 5%). This test pro-

cess is not reflected in the diagram. After the test, the punched tapes are read via the fast reader, into the core store of the computer. The reading time per sounding is approx. 2 seconds. With the aid of the computer program meanwhile developed, which likewise has to be read into the core store of the computer, the result data are computed. The computation process takes 120 seconds. Thereupon, the result data are punched by means of a fast perforator on a punch tape (approx. 80 seconds per sounding). It is advisable to punch the data of several soundings, one after the other, on a continuous tape of 250 m length. The latter is then fed into another teletypewriter which will print out the result data in the form of clearly arranged tables. They are then furnished to the scientist who will study the mutual correlations of the data, taking into consideration any characteristic atmospheric conditions.

3. The Computer Program as Such

The computer program is described in full in Chapter X, Appendix, 5.

4. Description of Final Data Tables

In Chapter X, Appendix, 3, a number of Final Data Tables are printed, true to original, as supplements to individual runs. They are arranged as follows:

Headings: Z = Zugspitze system (W = Wank system)
Number of run; Date; Hour of start of run.

a. Main levels (Haupt-Niveaus")

Vertical intervals 100 m for Wank system;
Vertical intervals 200 m for Zugspitze system.

b. Special levels, selected by temperature structure ("MP-Temperatur")

Vertical intervals are roughly 30 m as a minimum.

c. Special levels selected by humidity structure -- to the extent applicable -- ("MP-Feuchtigkeit")

Vertical intervals see b.

d. Special levels, selected by air conductivity structure -- to the extent applicable -- ("MP-Leitfähigkeit")

Vertical intervals see b,

Meaning of letters designating vertical columns of Tables:

Z	:	Number of level
H	:	Altitude (m.a.s.l.)
P	:	Pressure (mb)
T	:	Air temperature (^{o}C)
TF	:	Wet temperature (^{o}C)
PT	:	Potential temperature (1/10 ^{o}K)
EPT	:	Equivalent potential temperature (1/10 ^{o}K)
E	:	Water vapor pressure (mb)
S	:	Specific humidity (g/kg)
RF	:	Relative humidity (mm%)
+L	:	Positive polar conductivity (10^{-14} 1/Ohm.m)
-L	:	Negative polar conductivity (10^{14} 1/Ohm.m)
+/-	:	Ratio of both conductivities
L	:	Total conductivity (see above)
DH	:	Height difference (m)
TV	:	Virtual temperature (^{o}C)
G-T	:	Gradient of T
G-E	:	Gradient of E
G-S	:	Gradient of S

G-RF : Gradient of RF
G-PT : Gradient of PT
I : Ionization rate (ions/cm^3 sec)
N : Number of Aitken nuclei (cm^{-3})
A : Incremental exchange coefficient (g cm^{-1} sec^{-1})
D : Diffusion coefficient (cm^2 sec^{-1})

Definition of sign of gradients:

The gradients are positive when:

T : decreases with height
PT : increases with height
E : increases with height
S : increases with height
RF : increases with height

The meanings of the letters and gradients should be born in mind when later the Tables and graphs are discussed.

IV. STATISTICAL RESULTS

1. Preliminary Remarks; Kind of Relations Studied; Principles of Selection

Our basic idea in the statistical analyses was to find significant relations between the fine structure characteristics of the meteorological parameters, on the one hand, and the respective value of the incremental vertical exchange coefficient A_i on the same vertical interval, on the other hand. There are numerous possibilities of doing so. After preliminary tests, the following relations appeared sufficiently promising to be numerically investigated (for legend see above).

a) $A_i = f$ (G-T) Inversions
b) $A_i = f$ (G-PT)

c) A_i = f (G-E) Inversions and other barring layers
d) A_i = f (G-PT) General relation,

There was no question, from the outset, that all values from the computer tables were not suitable to be "blindly" used for differentiation of the structure of these relations. The definition of the principles of selection, however, is a tentative one and may be varied or supplemented by other, additional ones in subsequent, more exhaustive investigations. In regard to the above defined relations, the following principles of selection were applied in the following:

a) Data of such vertical intervals only were used (no matter whether bounded by main or special levels) containing distinct temperature inversions (G-T negative). These inversion layers were required to have settled both in time and position; cases with a marked vertical movement of the inversion level were excluded, likewise such with a sudden formation or disintegration of the inversion structure. That pair of values was used at that vertical interval where the steepest negative gradient of T was reached.

b) Same definition as a).

c) Again, data of only <u>one</u> vertical interval were used per run, with the following conditions applied: if there was no negative G-T value anywhere that vertical interval having the lowest positive value was selected; if there was a vertical interval with - G-T, the latter was used; if there were several such the highest negative G-T value was used as criterion of selection. At the same time, G-E was required to show a maximum.

d) Almost all existing pairs of values were used, except such, derived from periods or layers where the structure was subject to rapid changes in time, a transformation of the local meteorological conditions was in progress, or where fog or

precipitations were traversed during a run. Likewise, values from layers with distinct inversions have not been included; they belong under b).

In the following part of this we show the distribution of the individual pairs of values as dots in the graphs, on the one hand, and each time a respective statistical evaluation, on the other. The latter was made with our Hewlett Packard computer which, in the meantime, has been equipped with an extended memory. The pairs of values were keyed into the computer. The latter then separated them according to A-values. To this end, each A decade was subdivided into 10 equal intervals. The computer automatically determined the 40 mean values between $A_i = 0.1$ and $A_i = 1000$, plus the pertinent criteria of significance

$$\sigma_M = \pm \sqrt{\frac{\sum_{i=1}^{n} (x_i - \bar{x})^2}{(n-1)\,2n}}$$

The results of these statistical investigations are presented in the form of "stepped graphs". In the discussion of the graphs below the above listed criteria of selection should be born in mind, as appropriate.

2. Relation $A_i = f$ (G-T), Inversions

Fig. 2 shows the scattering of the individual pairs of values for the relation $A_i = f$ (G-T) in the case of a typical inversion (see Section IV.1.a). The study covers the period of 28 July 1970 through 17 February 1971 with a total of 388 pairs of values. The graph is analogous to Fig. 23 in (1). A comparison of the result depicted in said graph with that in Fig. 2 reveals this: In principle the earlier result agrees quite well with the more recent one except that the relation $A_i =$ f (G-T) is now much more pronounced, the scattering of the values is narrower.

Fig. 3 shows the analogous result of a statistical analysis with statement of scatter σ_M. This graph clearly shows: There is

a strict, significant relation between an incremental exchange coefficient in the range of A_i = 0.1 through 300, and the temperature gradient in the range of - 0.1 through -10 °C/100 m, provided that the inversion in the vertical interval under consideration is a genuine,stable and largely motionless one to which the A_i and G-T values apply. The relation is independent of season or time of day.

Hence, the function presented in Fig. 3 is already ripe for practical application.

3. Relation A_i = f (G-PT), Inversions

Fig. 4 shows the scattering of the individual pairs of values for the relation A_i = f (G-PT). It, again, applies to cases of typical inversions. The principle of selection is defined in Section IV.1. a) and b). The period of the study, again, stretches from 28 July 1970 through 17 February 1971 and covers a total of 289 pairs of values.

With the scattering of values not too wide a surprisingly clearly defined logarithmic relation is found between incremental exchange coefficient A_i and potential temperature gradient G-PT:

If in a defined vertical interval with an inversion the potential temperature gradient increases, the intensity of exchange in the same layer is decreased. The following rule may be stated: Per 1 °C/100 m increase of G-T, A_i is decreased by one decimal power.

Fig. 5 shows the analogous result of a statistical analysis with statement of scatter σ_M. True it is greater than in Fig. 3, nevertheless between A_i = 100 and A_i = 0.8 the relation may be considered well established. The volume of data material is to be further increased in order to make the relation come out even more clearly. This particularly applies to the value range of $> A_i$ = 150 and $< A_i$ = 1.

Aside from these statements we feel justified in claiming that this function A_i = f (G-PT), too, may already be practically applied.

We consider the statement important that now we have two criteria, independent from each other, to quantitatively state the barring effect of an inversion, viz. the function in Fig. 5 <u>and</u> that in Fig. 3. From now on, the layer having the strongest barring effect may immediately be determined from the aerological data: negative temperature gradient and positive potential temperature gradient must be at maximum values.

<u>4. Relation A_i = f (G-E), Inversions and Other Barring Layers</u>

In studying the relation between the incremental exchange coefficient A_i and the gradient of water vapor pressure (G-E) we have dropped the demand that a genuine, stable and stationary inversion must exist. With the aid of the gradients of temperature and potential temperature we have merely searched for a barring layer in general (for definition of principle of selection see Section IV.1.c). For the layers thus defined we then studied the above described relation, using data from the period of 28 July 1970 through 17 February 1971. The graph containing the individual pairs of values is shown in Fig. 6; the results of the statistical analysis is presented in Fig. 7. Between A_i = 100 and A_i = 1 we find a significant logarithmic function having a relatively narrow scatter with only 263 pairs of values. It appears desirable to increase the data, particularly in the limiting zones. The rule has been established that A_i will be increased by one decimal power when the negative value of G-E is increased by 1 mb/100 m - and vice versa. This is comprehensible in principle since the vertical exchange of water vapor, too, is controlled by the amount of the A_i value. Nevertheless, it is probable that the graphs 6 and 7, for the first time, convey a tangible picture of the function as such as it is actually applicable in the atmosphere.

With this function, now, we have an independent third criterion by which to locate layers having a barring effect, and to determine the degree of their barring effect.

5. Relation A_i = f (G-PT), General Cases Other tan Inversions

Within the scope of the previous studies we had limited ourselves to either typical inversions (Sections 2 and 3) or, at least, layers of such aerologic structure as to permit the inference of a barring effect, including inversions (Section 4). To the extent that criteria of selection were applicable at all, the values of one layer, at maximum two layers, per run were, in this manner, to be taken into consideration. The study now being discussed, however, covers all layers (any number per run) except such containing an inversion. As explained in Section IV.1.d) , the following have also been left outside of consideration: cases with a rapid transformation of the weather condition, with precipitations, or runs entirely or partly through clouds.

Preliminary studies have revealed that above all the potential temperature gradient is very well suited for this kind of a general statistics.

In order to determine whether seasonal differences might play a part in this we have subdivided the entire period from which values are available, into 28 July 1970 through 12 November 1970, and 13 November 1970 through 17 February 1971. We shall here dispense with a presentation of the distribution of individual pairs of values, even more so as, in view of the large volume of data, this kind of evaluation would have been too expensive.

The results of the statistical investigations are shown in Figs. 8 and 9, with statements as to the respective scatters. From both figures a clear and strict relation becomes apparent (A_i = f (G-PT)), scattering only insignificantly in the range bet ween A_i = 1000 through A_i = 1. At $A_i < 1$ the relation becomes

uncertain. As demonstrated by Fig. 10 the results from both periods of time are in good agreement with one another, hence there is no seasonal impact.

The relation depicted in Figs. 8 through 10 applying to those atmospheric layers which are not of the nature of an actual inversion, clearly deviates from that deduced for typical inversions (Fig.5). The reason for this deviation is yet to be clarified.

The function A_i = f (G-PT) resulting from Figs. 8 through 10 is suited for deducing, in practical work, from G-PT values the strength of vertical exchange, unless typical inversions are being delt with in which case the function pursuant to Fig. 5 is to be applied.

V. DETAILED CASE STUDIES

1. Preliminary Remarks

The following case studies are partly based upon the original recordings by cable car telemetry system and pertinent parameter data tables supplied by the computer. The wind profiles are not yet taken into consideration. The graphs and tables are compiled in SECTION X, APPENDIX, 3. They, at the same time, afford a glimpse into our "Analysis Workshop". The numbers of the levels in the recordings correspond to the numbers of levels in the tables. On the other hand, the case studies are based upon a study of changes in time of certain structural elements at the inversion level and pertinent numeric values of functions: A_i = f (G-T), A_i = f (G-E) and A_i = f (G-PT). Separate graphs which are given consecutive figure numbers serve this purpose (SECTION X, APPENDIX,1). In the graphs on which the values of the aforesaid 3 functions are entered, we have also plotted the "normal progress" of each respective function, in the form of dotted areas, which also, based upon Figs. 3, 5, 7,

indicate the mean scatter. The examples to be discussed hereinafter, are marked with identification letters in alphabetical order. These letters have been transferred to all graphs, recordings and tables (also those in SECTION X, APPENDIX, 3,) so no doubts may arise as to their correlation.

The runs of one and the same day bear encircled numbers in chronological sequence. These, too, are also found on all recordings, graphs and tables, hence the variations of all data in the course of time are readily recognized.

Following are some necessary remarks on the problem of equilibrium. An aerological structure, e.g. the variation of temperature across an inversion layer, and the vertical aerosol profile across the same vertical interval can be in lawful correlation to one another (as shown, e.g. in Figs, 3, 5, 7) only if there had been enough time for the setting of some stationary condition. There are two possibilities:

a) A temperature inversion is created, very rapidly, say in less than 1 or 2 hours, through some processes which are known in principle. At the moment of its formation, the aerosol profile cannot, as yet, have been accommodated by this inversion to the instantaneous barring effect. The adaptation process requires a few hours; for instance, by evacuation or coagulation of aerosol particles above the inversion and concentration below, until equilibrium has been set based upon the mere eddy diffusion process. Not until then can a lawful correlation exist, and parameters be within the normal ranges of the functions per Figs. 3, 5, 7.

b) With the barring effect of an already existing inversion being constant in time, the source strength of the aerosol in the layer below the inversion may change, or aerosol may be brought in or drawn off, through advective processes. In this case, again, the equilibrium of diffusion

is temporarily disturbed and time is required for readjustment.

c) It may happen that aerosol fluxes from some a source into the lower atmospheric layers, where it will spread for the time being. At the upper boundary of the thus developed haze layer, an exradiation of heat begins. This causes continuous cooling and formation of vertical temperature structures which react back upon the vertical aerosol distribution. In this instance, again, the result may be a disturbance of the eddy diffusion equlibrium of long duration.

Other processes are possible which shall not be discussed in this context. The following studies are to show the meteorological conditions under which an equilibrium of diffusion is, as a rule, encountered, or not encountered, and what numeric relations will be found in each respective case.

2. Example A, 5 Oct 1970, Figs 11 through 14
Spontaneous formation in the medium altitude zone of a most sharply defined inversion, which from noon on descends.
Equilibrium of diffusion set from the beginning.

Looking, to begin with, at the original soundings (APPENDIX) we find that at around 1100 CET (run 0) neither T nor TF show any distinctive structure, and this is true of the entire vertical interval. The temperature gradient, however, is weak, and humidity is decreasing with height. The polar conductivities +L and -L are steadily increasing from level 11 to level 5. The causes of their variations above level 5 do not concern us in this report. At 1157 CET (run 1) already, a sharply defined inversion exists immediately below level 6, with humidity decreasing with increasing height, which is clearly reflected in the behavior of +L/-L. In the course of the day the picture of a typical temperature inversion with humidity break

becomes more and more distinct. At the same time the abruptness of the break of +L and -L keeps increasing, and the aerosol concentration below the layer of the break is continually growing (the values of +L and -L are decreasing). Thus the gradient of the aerosol concentration across the layer of the break is getting steeper and steeper. From noon until night the level of the inversion is continuously descending.

Let us now take a look at the detailed analyses in Figs. 11 through 14. Fig. 11 shows changes in regard to altitude and time for:

a) the layer where the inversion is located ($-G-T_{max}$);
b) the level with a minimum value; and
c) a maximum value of the equivalent potential temperature EPT.

With regard to b) and c) the following must be added: in case of well defined, stable inversions scarcely variable in time or space, or other barring layers, a minimum of EPT is encountered above the barring layer, with a maximum within or below its level. In the absence of barring layers EPT, as a rule, decreases evently with decreasing height. Thus barring layers normally also identify themselves by an "inversion" in the course of EPT, which, however, proceeds inversely to T. The fact that this EPT inversion (signs: - and = in Fig. 11) is convected together with the temperature inversions proper (sign: ⊔) is clearly apparent from Fig. 11. This figure also reflects the time slope of A_i. During the descent, to begin with, A_i increases. In the evening, when the inversion has settled, A_i drops to a minimum value of only 0.3.

In Fig. 12 we study the variations with time in the range of the function $A_i = f(G-T)$ within the inversion layer of runs 1 through 4. The variation of the pairs of values occurs exclusively inside the (dotted) normal range. Thus, A during

the descent (run 1 after 2 to 3) increases, it is true, but G-T, too, changes by a corresponding amount as the function shows. Hence, structure of inversion, and control of the vertical aerosol distribution by it are in a true-to-function relation to each other. We arrive at an analogous result if we study Fig. 13 ($A_i = f(G-PT)$). Except for run 1 the pairs of values are within the normal range of the function. Hence, the behaviour of G-PT and the pattern of the vertical aerosol structure correspond to each other. From these finding we may deduce that equilibrium of diffusion has practically existed from the beginning. No analogous conclusion may be drawn in regard to the relation $A_i = f(G-E)$, as illustrated by Fig. 14. In this instance all pairs of values are exclusively outside of the normal range. The E-gradients are much greater than would be permissible with regard to the A_i values. Hence, a change must have occurred in absolute humidity (e.g. caused by advection) above or below the barring layer, which was not related, across the barring layer, to the eddy diffusion process, whereas by contrast the aerosol distribution did obviously correspond to the barring effect of the layer.

Conclusions drawn from this example:

Even in case of spontaneous formation of a very sharply defined inversion, and during a slow and constant descent of the same, the discovered "normal relations" between A_i and G-T or G-PT, respectively, are being retained. Thus they adequately describe the vertical distribution of aerosol; the state of equilibrium prevailed. A deviation of the values outside of the normal range of $A_i = (G-E)$ reveals an advective change of humitidity. This emphasizes the high value of such detailed analyses. The rule that there has to be a minimum of EPT above the barring layer, and a maximum within its level, is met at all times. It may additionaly serve as an indicator of the barring layer.

We are here dealing with a case where rapid formation of an inversion and the transformation of the vertical aerosol structure

went hand in hand together in such a manner, that the condition of equilibrium for the eddy diffusion was met at all times. Conditions for the occurence of this situation remain yet to be defined.

3. Example B, 18 Nov 1970, Figs. 15 through 19.
Well-defined, spontaneously formed inversion, with height of barring layer and intensity of barring effect varying, Equilibriumof diffusion retained.

The soundings (for a selection pertaining to Example B see X., APPENDIX 3) already show that we are here dealing with a (spontaneously formed) inversion and barring layer which is subject to considerable fluctuations in time as to its structure and height. As demonstrated by Fig. 3 the maxima of -G-T and -G-E are located at the same respective altitude, which level, however, fluctuates considerably. A maximum of EPT above the inversion level and a minimum within the same cannot be found. A_i, too, fluctuates considerably from run to run, and the rule is confirmed: If the inversion level descends the barring effect of the inversion is temporarily reduced (A_i is increased), as is demonstrated by runs 3 and 6.

As is recognized from Figs. 16 and 17 the values are fluctuating precisely within the normal range of the function A_i = f (G-T) and A_i = f(G-PT). So, with the exception of runs 2 through 4, diffusion equilibrium prevails as in Example A. The change from run 2 via 3 to 4 is indeed striking. Whereas A_i is changed considerably, G-T and G-PT remain practically constant, the full "normal" scatter of the function is traversed. This means that during the vertical movement of the inversion from 2 via 3 to 4 the aerological structure of T and PT is retained whereas the permeability of the barring layer is reduced temporarily. A local perforation of the layer by turbulences in the early afternoon with relatively extensive insolation, is likely to be the main cause thereof. This example indicates how, by means of such a detailed analysis interfering factors may be isolated.

Considering Fig. 18 we observe that the normal range is considerably exceeded in both directions. The values are not, however, all shifted in one direction as in Example A. This rules out progressive changes of absolute humidity due to advection. Turbulence caused, forced vertical transportation of water vapor is, much rather, to be considered as a cause (transitions from 4 to 5, from 5 to 6). It is, however, a striking observation that the transition 2-3-4 again appears to be out of place: While the water vapor gradient remains constant, A_i varies considerably. This means again that here a variation of the inversion had temporarily been forced, pointing toward interference with the system from the outside (e.g. heat irradiation). It is interesting that in this case a variation of the vertical aerosol structure was triggered (as a consequence whereof a higher A-value resulted for run 3), not however one of the aerological structure and of the vertical distribution of water vapor.

For the present example we have plotted the vertical profile of the incremental exchange coefficients A_i and of the water vapor from run to run as a special representation in Fig. 19. This representation does not only show very impressively the variation in the fine structure of the A_i profiles but also the vertical displacement of the layers having maximum barring effect (A_i minima). What we want to demonstrate, however, is that just these sometimes very thin layers of highest resistance to eddy diffusion are indicated in the E profile by a peak-like dip of water vapor concentration. This is true even in the case of a splitting into two barring layers with a small difference in height (run 6). At the same time we recognize a problem in the E profile for run 3: Here it is not so much a dip but much rather a sharply confined increase of E with height that is characteristic. Such findings with the aid if detailed analyses are conductive to understanding deviations from normal behavior observed from time to time.

The gathering of such exceptions and the investigation of the conditions under which they occur is important for the following reason: In order to reduce, on a pertinent basis, the scatter in the statistical investigations it is necessary to introduce a more detailed subdivision. Most of all, the complex causal nexus of the various parameters may gradually be cleared up in this manner.

Conclusions drawn from the example:

In the case of spontaneous formation of an inversion and intensive vertical movement of the same, the discovered "normal relations" between A_i and G-T or G-PT, respectively, are retained and depict the vertical aerosol distribution which corresponds to a stationary setting of equilibrium. A "breaking out" of the values from their normal distribution, insignificant for G-T and G-PT, and quite considerable for G-E, points to a convectively forced variation in the vertical aerosol distribution, which can no longer be lawfully related to the aerological structure. The vertical water vapor gradient, in this case, behaves differently from the vertical aerosol gradient. With the barring layer sharply descending, A_i is temporarily increased. Barring layers are always indicated by conspicuous deviations of the E profile across very small vertical intervals.

4. Example C, 14 October 1970, Figs. 20 through 23

Sharply defined inversion with predominantly insignificant vertical variations but considerably fluctuating barring effect. Vertical aerosol gradient in stationary equilibrium on basis of aerological structure.

Example C concludes, for the time being, those cases of inversions which are distinguished by the vertical aerosol gradient being in equilibrium on the basis of the given aerological structure, in other words, where the normal relations of our function are fully or largely met.

As is shown by the original recordings in APPENDIX, 3 we are, from run 1, dealing with a sharply defined inversion the strong barring effect of which is clearly expressed by the profile of the air conductivities. Only early in the morning (run 0) an inversion is just slightly indicated, with only a very weak barring effect. The vertical movements can be clearly recognized on the original recordings, e.g. by comparison of run 6 with run 8.

To begin with, the variation as a function of time and altitude is shown in Fig. 20. In the forenoon we find that the ascent of the inversion layer from run 1 through run 3 results in a weakening of its barring effect (increase A_i; in Examples A and B we had found a weakening with a descent of the inversion), whereas later in the afternoon the opposite relation is found. Hence, vertical movement, no matter in which direction, may lead to either a weakening or a strengthening of the barring effect. We are thus compelled to restrict our statement to the more generalized form: Vertical movement of a barring layer results in a change to its barring effect. The nature of the individual relation is certainly depending upon the causative reasons for the movement of the inversion (advective processes, anticyclonic descent). In order to determine these, further detailed analyses will be needed. In the context of this discussion of the examples the implications of microscale and mesoscale meteorological conditions and processes are not to be discussed in any detail. A deepening of the detailed analyses in this direction is in process.

In the instant case we again find a minimum of EPT above the barring layer, but no marked maximum below.

Figure 21 shows the variations with time of our values relative to function $A_i = f(G-T)$. We notice that the fluctuations of the values largely remain inside the normal range. An insignificant breaking out (deviation from equilibrium) occurs from 5 through 6 to 7. This means that in Fig. 20, too, we must

consider the temporary descent of the inversion level (run 6) as the expression of an interfering process. At any rate, the fact is again conspicuous that A_i changes considerably, e.g. from run 5 to 6, although the aerological structure of T has been retained (G-T constant). The attenuation of the aerosol gradient encountered at the same time therefore must be due to an exterior cause, e.g. perforation of inversion by local turbulence. It is striking, however, that, as Fig. 22 indicates, the variation of the values is largely within the normal range of the function $A_i = f$ (G-E), at least the transition 5-6-7 is within. Again, aerosol and water vapor behave differently in the case on a disturbance of equilibrium. It is surprising, however, that (see Fig. 23) the values for $A_i = f$(G-PT) are almost exclusively outside of the normal range of this function. What conclusions have to be drawn therefrom is yet to be investigated, using all available meteorological data.

Conclusions drawn from this example:

Vertical movements of the barring layer result in variations of their barring effect and a disturbance of the diffusion equilibrium. What direction such a variation may take cannot necessarily be predicted, until such time that the causative reasons for the interfering process are known. It appears certain that detailed analyses of the demonstrated kind will lead to recognition if the causes of interference of microscale and mesoscale meteorological conditions are included in future investigations. For because three basic function are available, based on G-T, G-E, and G-TE, it is, as a rule, possible from the agreement of the individual values with two of these to isolate the one which is most of all affected by the disturbance of equilibrium. This may later lead to isolation of the interfering cause.

5. Example D, 11 December 1970, Figs. 24 through 26.

Inversion at constant height. Vertical aerosol gradient not in equilibrium on basis of aerological structure.

In Figs. 24 through 26 we are studying the case of cyclic variations (runs 1 through 4) of the value obtained, in the range of functions $A_i = f(G-T)$, $A_i = f(G-E)$, and $A_i = f(G-PT)$. All data obtained from these runs are far outside the normal ranges of the three functions. Vertical movements of the barring layer did not occur. Convective interference, also, must be excluded. To what extent persistet advective processes were determining in this case in the formation of this exception remains to be investigated. For it is striking that this low-lying inversion has been formed through the inflow of near-ground polluted cold air. But although this near-ground cold air layer was soon settled a state of equilibrium did not come about.

To begin with, our example shows that even with inversions at rest and seeming freedom from interferences we must be prepared for extraordinary results. If it were not possible to recognize and isolate these (e.g. on the basis of detailed analysis) such values would result in a considerable scattering within the data material. However, the investigation of the causative relations must not be neglected, particularly in such unclear cases. Exactly these may supply valuable insights.

6. Example E, 17 October 1970, Figs. 27 through 30.

Case of two simultaneously existing inversions one of which is suddenly formed newly and the other disintegrated. State of equilibrium is not attained.

Here we are dealing with a relatively complex case. It is remarkable for the only one initially existing inversion and barring layer descending and disintegrating. Prior to its disappearance, however, a second inversion and barring layer

was forming about 400 m above which also descends and goes on existing to the end - if with a weak barring effect. From the picture of the original recordings (X., APPENDIX, 3), layer I ows its formation to a layer of haze actively conveyed to the spot at little short of 1500 m a.s.l. (minima of +L and -L during run 1). In the following we consider the original recordings along with Fig. 27. This initially striking aerosol structure is reduced to a mere trace during run 2, but during run 3 it is suddenly sharply defined again at 1200 m a.s.l. During runs 3 through 6 layer I is disintegrating or hazily merging with layer II which has meanwhile descended and whose existence was first hinted at during runs 3 and 4. Presumably the transition was as indicated with dots in Fig. 27. As is apparent considerable instability prevails in the present case, impeding the setting of a stationary equilibrium of diffusion, as will also be seen from Figs. 28 through 30. First we cast a glance at the variation with time of A_i in Fig. 27. We note that with a rapid descent of both I and II the barring effect is reduced (A_i is steeply increased, runs 2 and 3 for layer I; runs 3 through 5 for layer II). A regeneration of the barring effect for both layers occurs when the descent has come to rest (runs 4 through 6 for layer I; runs 7 and 8 for layer II).

We now consider the position of the data relative to the normal ranges of our three basic functions. In doing so we go from the following sequence of values:

Runs 1 through 6 at level of layer I; runs 7 and 8 at level of II, pursuant to the merger of both layers as indicated (dotted) in Fig. 27.

The poorest agreement is found relative to function $A_i = f(G-PT)$ in Fig. 28. With regard to the G-PT values the exchange coefficients are too low. i.e. the barring effect appears "too strong". This above all applies to runs 5-6-7. But this is the very vague transition phase from I to II with disintegration of II. It is not surprising, then, if during this time interval

an equilibrium situation does not prevail. The positioning of the individual values relative to the normal distribution is already notably better in Fig. 29 ($A_1 = f(G-E)$). Surprisingly, the above mentioned transition phase of runs 5-6-7, of all things, is not out of line here: water vapor gradient and aerosol gradient are here apparently triggered by the same atmospheric process. By contrast, the values of runs 1 through 3, i.e. during the descent of layer I, are outside of normal distribution: The barring effect of the layer appears to be stronger, during this time interval, for the aerosol than for the water vapor. With regard to function $A_1 = f(G-T)$, however, - see Fig. 30 - all values of our example (excepting run 5) are within its normal range. From this it would be concluded that with regard to vertical aerosol distribution, approximate diffusion equilibrium must have temporarily prevailed, after all.

Conclusions drawn from this example:

Descent movements of barring layers are coupled with a temporary reduction of their barring effect. The latter is regenerated when the vertical movement has come to rest. In case of a double inversion with disintegration of the lower layer and the suggestion of merger with the descending upper one, the diffusion equilibrium is temporarily disturbed. A discrepancy develops between vertical water vapor and aerosol distribution. A minimum of the equivalent potential temperature above the barring layers, and a maximum near the barring layers were not found which also points toward disturbed equilibrium conditions.

7. Example F, 30 September 1970, Figs. 31 through 34

Clearly defined inversion descents slightly, remains at constant level for some time, finally ascents steeply with simultaneous disintegration. Largely set equilibrium of diffusion.

Interest is particularly held by the phases of ascent and disintegration of the inversion or barring layer. For this reason,

we have represented only runs 4 through 7 by their originals and tables in X. APPENDIX,3. As with the previous runs (from which a descending movement of the inversion is recognized), an increase of temperature and decrease of humidity with height within the inversion zone is also very distinct with run 4. Just one hour later (run 5), however, the T-inversion has temporarily disappeared whereas the humidity decrease was retained, although this structural detail has risen somewhat. During run 6, a T inversion with humidity decrease is again recognized, if at a considerably higher level than before. Hardly any structures are left for recognition during run 7, traces are derived from the tables.

In Fig. 31 we consider the variations with altitude and time. In the morning the well defined inversion descends by about 10 0 m. During this descending movement the A_i values are relatively high. With the barring layer becoming stationary, however, A_i reaches minimum values between no more than 0.6 and 1.5. At 1300 hours an ascent commences, immediately triggering a steep increase in the A_i values which persists until disintegration of the layer. It is remarkable that in instant case, again, a minimum of the equivalent potential temperature is found above the barring layer (100 m - 200 m vertical interval), with a maximum approximately at the level of the barring layer as such. Only in the case of vertical movements of the barring layer, the EPT maximum, <u>too</u>, is <u>above</u> the barring layer (runs 2 and 7).

Fig. 32 shows that the individual values (2 through 4) are in just barely satisfactory relation to the normal range of function $A_i = f(G-T)$ only during the time that barring layer has nearly or fully settled. But during the vertical movement they are far outside thereof (1 to 2; 4 to 6).

The two pairs of values for a very low-lying near-ground inversion in the morning ("low"), which rapidly disintegrates thereafter, are within the normal range. The values of our example

are quite satisfactory with regard to the normal distribution of $A_i = f(G-E)$, according to Fig. 33. However, we notice a contrast to Fig. 32: While the inversion has become stationary the values fall insignificantly outside of the normal distribution. The vertical aerosol gradient turns steeper, temporarily, than would correspond to the vapor pressure gradient, whereas agrement prevails during the vertical movements. The values in Fig. 34 are completely outside of the normal distribution of $A_i = f(G-PT)$. We find a cyclic sequence with extreme deviation during the stationary phase of the barring layer. No explanation can be offered therefor, as yet.

Conclusions drawn from this example:

It was confirmed again: Vertical movement (no matter whether up or down) of the barring layer results in an increase of its permeability, its becoming stationary results in a strengthening of the barring effect. The A_i values of the example are in satisfactory agreement with functions $A_i = f(G-T)$ and $A_i = f(G-E)$, slight deviations from the former are found during the vertical movement, from the latter during the stationary phase. The superpositioned minima or maxima, respectively, of EPT are found to exist throughout, even during the vertical movements.

8. Example G, 28 September 1970, Figs. 35 through 38.
Considerable vertical and structural variations of an inversion. Equilibrium of diffusion is not attained.

This example concludes our discussion of cases with vigorous vertical movements of barring layers. The original runs in APPENDIX 3 already show that not only does a distinctive vertical unrest prevail but also the pattern of the structures is changing rapidly. We immediately pass on to Fig. 35. The variations with time of A_i are particularly remarkable. Steep increases of A_i are invariably found when - in accordance with our earlier experience - the level of the barring layer

is rapidly changed. This is very drastically demonstrated by the transition from run 2 to 3: A_i is increased by two orders of magnitude and remains persistently high during the subsequent ascent movement (3 to 4). Not until the stationary condition of the barring layer exists during runs 6 and 7, does A_i arrive at a minimum. Renewed disquiet from runs 7 through 10 causes A_i to increase again.

The vertical displacements of the various structural elements, according to Fig. 35, present an almost confusing picture: True, minimum and maximum of EPT are still always found and in not too great vertical distance from the inversion level (as a maximum a few 100 m, as an average 200 m), but the maximum is sometimes above, sometimes below the barring layer. Even the respective strongest gradients of T and E are not - as usual - close to each other. Vertical differences up to 150 m are encountered. Besides, maximum G-T is sometimes above, sometimes below maximum G-E.

Due to the sometimes extremely poorly developed temperature gradients Fig. 36 contains only very few individual values. As was to be expected, they are far from the normal distribution of function $A_i = f(G\text{-}T)$.

It is all the more surprising that, in Fig. 37, the individual values fit very well into the normal distribution of $A_i = f(G\text{-}E)$. Although most certainly the setting of an eddy diffusion equilibrium was not possible in our instance the variations with time of the aerosol gradient (expressed in terms of the behavior of A_i) and of the water vapor gradient (G-E) are in good agreement with each other. The interferences, apparent from the continuous structural changes of the aerological pattern and from the vertical variations, thus took effect, in Example G, upon aerosol and water vapor distribution analogous to and on the basis of, the normal relation of $A_i = f(G\text{-}E)$. In Fig. 38, the individual values of our example are far from the normal distribution of $A_i = f(G\text{-}PT)$: We find a cyclic sequence for runs

2 through 7 and another one from 7 through 10. We find it interesting that the first cycle, if defined only from 2 through 6, comprises exactly the first ascent, the second cycle from 7 through 10 the second ascent. It appears to be possible to describe, with the aid of these cyclic "movement graphs", the structural variations connected with processes of ascent or general vertical displacement, and later to improve our understanding of them functionally. At any rate, in retrospect we may say that the cycles in the following earlier figures were connected with vertical movements of the barring layer: Fig. 34 (runs 2 through 6, initial lingering, then rapid ascent with disintegration of the inversion); Fig. 30 (runs 4 through 8, initial descent, then merger with lower disintegrating inversion). An exception relative to all three normal functions is formed by Example D with its cycles. True, there is no vertical movement here, but a clearly cyclic loosening up of the inversion structure (runs 1 through 5) by turbulences in the course of the day. So it will be necessary to pay still more attention to such graphs with a cyclic pattern, in the future, along with further meteorological parameters.

Conclusions drawn from this example:

In the case of violent structural and vertical changes of the barring layer eddy diffusion equilibrium cannot come about. It is, however, possible that variations of the vertical aerosol profiles and water vapor profiles are running in conformity with each other and are jointly controlled by the interferences determining the complex pattern. Again it is shown that vertical movements of the barring layer are connected with a reduction of its barring effect. During vertical movements a cyclic sequence of the values is found relative to the normal distribution of the function $A_1 = f(G-PT)$.

9. Example H, 26 September 1970, Figs. 39 through 43.

Analysis of (a) the upper boundary of the exchange layer, and (b) an ascending inversion located below.

With this example we leave the analysis exclusively of inversions or similar structures analogously belonging thereto. We consider parameters from the zone of the upper boundary of the exchange layer. However, in the present case there is also an inversion which we shall include in our considerations. The inverse temperature gradient is only rather poorly defined, however.

To begin with we go back to the original recordings in X. APPENDIX, 3. The position of the upper boundary of the exchange layer there has been marked with E, that of the inversion with I. In the profile of +L (partly also in that of -L) the increase by increments with height is recognized at the two levels so marked. Until evening (run 6), however, the structures disintegrate to a large extent. What clearly remains is the +L increment in the zone of the loosened-up structure of E.

In Fig. 39 we consider the variations in time and space of the two formations. From the value tables to Example H it is seen that the exchange layer is marked by a minimum and a subjacent maximum of the equivalent potential temperature EPT similar to what we had found with stationary inversions as a rule. The altitudes, of these structural details are enterred in Fig. 39. Whereas in the course of the day the upper boundary of the exchange layer perpetually descends, the - weakly defined - inversion ascends in increments, above all from run 5 to 6. The rule found confirmed for stationary inversions, according to which EPT shows a minimum above the inversion, and a maximum below it, applies in the present case, too. These EPT structure details follow suit with the vertical movement of the barring layer proper.

Now a few words on the variation with time of the A_i values, considering Fig. 39: The barring effect of the inversion is

the greatest in the morning, and steadily decreases in the course of the slow ascent of the layer (A_i is growing). Another deterioration of the barring effect occurs in the evening as the layer ascends again. By contrast, the diffusion resistance through the upper boundary of the exchange layer increases by increments (A_i decreases) as the latter descends. In conjunction with the commencing disintegration of both layers in the evening, consistently the A_i values increase.

Due to the very scantily developed inverse temperature gradient a study with respect to function $A_i = f(G-T)$ is foregone. Fig. 40 merely reflects the travelling times for the runs, and the symbols for the exchange layer (E) and inversion (I).

On Fig. 41 we note that the individual values for I are within the normal range of function $A_i = f(G-E)$, even so when G-E is positive (viz. when water vapor pressure is increased with height). The values of E, too, just barely meet these requirements, however, no dependence upon the water vapor gradient is apparent. The values for $A_i = f(G-PT)$ in Fig. 42 are entirely outside of the normal distribution for this function. This is independent of whether they pertain to the exchange layer or to the inversion.

In Fig. 43 we have plotted the vertical profiles of A_i for runs 3 and 6. These once more very clearly illustrate the following processes:

a) descent and increase of barring effect of the upper boundary of the exchange layer;

b) ascent and decrease of barring effect of the inversion. finally approximate mutual touching of the two layers.

<u>Conclusions drawn from this example</u>:

The upper boundary of the exchange layer, too, is characterized by a minimum of EPT plus a subjacent maximum of EPT. During descent of the upper boundary of the exchange layer its barring effect toward eddy diffusion is increased.

10. Example I, 17 September 1970, Figs. 44 through 48.

Upper boundary of an exchange layer. Slight vertical movement.

In conclusion, we shall discuss the case of an upper boundary of the exchange layer which was sharply defined throughout the day.The original runs in APPENDIX, 3 very convincingly demonstrate the following within the zone of this layer: (a) an increase in temperature; (b) a decrease in humidity; and (c) a sharp increase in conductivity, i.e. a decrease of the aerosol concentration. These vertical variations are very distinct during runs 1,3,4; during run 2 the structure are loosened up, and the level of the layer has descended somewhat. In the following figures we have plotted, for comparison, the values of the main levels separately from the values of the special levels.

In Fig. 44 we first consider the variations with time and with altitude. To begin with it is to be pointed out that this level, too, is distinct for sharply defined minima of EPT above it, and corresponding maxima within its level. These EPT structural details follow suit in the slight vertical movement of the upper boundary of the exchange layer. During the temporary descent of the layer (run 2) A_i arrives at a maximum, i.e. movement reduces barring effect as with a true inversion.

Fig. 45 shows that all individual values are outside of the normal range of function $A_i = f(G-T)$. If we concentrate on the main levels only, G-T changes in the course of the day, it is true, but this has little impact on A_i (maximum during 2, see above). If we consider the special levels we obtain a cyclic progress which is surely coming close to the true conditions and corresponds to our experience gathered so far on the occurrence of cyclic interrelations.

In Fig. 46, using the values from the special levels we find a time slope which, it is true, keeps to the border line of the normal range of our function $A_i = f(G-E)$ but in agreement with

the latter's direction. If we lean on the values from the main levels only, A_1 remains unaffected by the variations of G-E.

An analogous conclusion is drawn from Fig. 47. If, however, we start from the values of the special levels we are again met with a cyclic pattern, although all the values are far from the normal distribution of function $A_1 = f(G-PT)$.

In Fig. 48 we have plotted the vertical profiles of A_1 for runs 2,3,4. The stepped curves are based upon the values from the main levels. The A_1 values from the special levels within the barring layer level are indicated (solid) and identified by numerals in circles. It is seen how across 1000 m from the barring layer downwards, consistently high A_1 values are encountered which is appropriate for an exchange layer. The loosening-up of the structure of the barring layer is clearly recognizable.

Conclusions drawn from this example:

Values derived from the special levels afford a much deeper insight into the true interrelations. The upper boundary of the exchange layer is again marked by EPT minima and maxima, one above the other with intervals of 150 m up to 300 m (EPT maximum within the levels of the layer). These structural details join in any vertical movements of the barring layer. Vertical movements lead to a weakening of the barring effect of the layer. The vertical movement is expressed in cyclic pattern of part of the values relative to the normal ranges of our main functions.

VI. THEORETICAL SUPPLEMENT FOR COMPUTATION OF EDDY DIFFUSION COEFFICIENTS

In (1,2) only the asymptote solution to the stationary combined diffusion (D) and coagulation (K) equation

$$D \frac{\partial^2 N(z)}{\partial z^2} - K N(z)^2 = 0 \qquad (1)$$

was used for the calculation of the eddy diffusion coefficient D (pages 25 et sequ. of (1)), i.e. that solution which extends to infinity. This presupposition without which the equation (1) is not analytically solvable applies strictly speaking only in that case where D does not vary with height. Where diffusion coefficient D_i differ from layer to layer, the partial solutions $N_i(z)$ to (1) must, for reasons of continuity, be so joined together that the diffusion current $J = - D\partial N/\partial z$ is a steady one. If N_i (z) and D_i designate the nuclei concentration and diffusion coefficient in the vertical interval from z_i through z_{i+1}, the following must then apply:

$$D_i \frac{\partial N_i}{\partial z}(z = z_i) = D_{i-1} \frac{\partial N_{i-1}}{\partial z}(z = z_i) \qquad (2)$$

to all i's.

Under these premises the equation (1) is no longer analytically solvable. The general solution or its inverse function, respectively, has the following form:

$$z - z_0 = \pm \int_{N_0}^{N} \frac{dx}{\sqrt{(N_0')^2 + \frac{2K}{3D}(x^3 - N_0^3)}} \qquad (3)$$

whereein N_0 and N_0' designate the nuclei concentration and its derivative at position z_0. In the source-free stationary case, N must decrease with height, and the minus sign on the right side of (3) applies.

Solution (3) represents an elliptic integral which is solvable only through methods of approximation. In addition, this is a variation problem. Therein, D in the integrand must be selected so that both members of the equation (3) are in agreement with each other. The derivative $N'(z)$ needed for the joining condition (2) are easily obtained from the inverse function $z(N)$:

$$N' = \sqrt{(N_0')^2 + \frac{2K}{3D}(N-N_0)^3} \qquad (4)$$

The equations (2) through (4) must be solved by layers wherein it would be best to use, for the top layer, the asymptote solution, compute therefrom the diffusion current at the lower border, and use the latter to solve the equation (3) for the next lower interval. This operation is to be repeated as often as necessary.

It is true that in principle this problem is solvable with the aid of our Hewlett-Packard desk computer with extended memory. However, this procedure requires such a high expenditure of computation effort that it would hardly appear applicable to the routine analyses. At present, a computer program is being developed for this purpose, with the aid of which it is being studied on a few selected examples what size deviations are permissible from the results of the procedure now applied in a routine manner. It is noted that due to the wide range of variation of D it will not be necessary to strive for a maximum of exactitude.

The procedure can always be used on any cases of particular interest in order to obtain more exact results.

The results of such comparisons will be reported and discussed in the next report.

VII. CONCLUSIONS

So much is certain that it would not have been possible to carry out either the statistical investigations or the detailed analyses on individual examples, without the preceding change-over of the routine evaluations and data processing to a largely electronic basis. It was only this measure that resulted in a sufficiently comprehensive mass of homogenous data from all available soundings for statistical purposes, on the one hand, and in a complete stock of all necessary parameters of the most varied kind per sounding for the detailed analyses, on the other. In practical processing of the electronically obtained data it was revealed that the most recently developed procedure of electronic data processing fully meets requirements.

The statistical analyses in logical continuation of the earlier research work revealed that there is a significant relation between the highest inverse temperature gradient and the incremental exchange coefficient, providing that there are stationary inversions with a set eddy diffusion equilibrium. The scatter of this relation is unimportant. The relation applies to an A_i range from 0.1 to 300. Under the same conditions (stationary situations, barring layers)a significant relation may be derived, too, between the highest positive gradient of potential temperature and the incremental exchange coefficient. It applies to the A_i range from 0.8 to 100. The scatter is not great, more data must be added.

The third of the three derived main functions for describing the behavior of A_i in structural zones (inversions, barring layers, upper exchange boundary), is based upon the vertical gradient of water vapor pressure. Again, a significant relation

was found with relatively insignificant scatter of values. It is valid for the A_i range from 1 through 100.

Finally it was attempted to discover more general interrelations which would apply quite generally, independently of structural details (inversions, barring layers). In doing so, another relation was found to stand the test: $A_i = f(G\text{-}PT)$ whose scatter is surprisingly small and whose range of applicability is between $A_i = 1$ and 1000.

Such main functions which are to have more general validity can be derived only if certain criteria of selection are applied. Such criteria, however, can grow only from sufficient experience. With increasing experience, however, the criteria must be improved, supplemented or, if need be, essentially changed, each of which means a reprocessing of the data material. This work, this is understood, can be performed only in a step-by-step manner.

In developing criteria of classification and selection, the detailed analyses proved to be especially helpful. Systematic work according to this method has only just begun. It already resulted in a series of valuable results. Some of these are: A minimum of the equivalent potential temperature is found 100 m or not more than 300 m above an inversion or barring layer resting in eddy diffusion equilibrium, and a maximum is found within the level of the layer proper. Within the zone of the barring layer proper the gradient of potential temperature reaches a maximum, likewise the negative gradient of the vapor pressure. If the temperature gradient is positive, it assumes a minimum, if it is negative, a maximum. As a rule, a minimum of the vapor pressure, narrowly limited in space, is also found within the level of a barring layer. If barring layers get into vertical movement their barring effect is reduced for the duration of such movement. After the barring layer becoming stationary its barring effect may be regenerated. Temporary interferences leading e.g. to a vertical movement of the barring layer or

triggering a loosening-up of its structure due to locally limited convection are usually expressed in cyclic patterns of the time slope of the essential parameters in the level of the barring layer.

The above discussed detailed analyses which, in the form presented, represent only an initial step, are calling, in order to be fecundated, for the use of all available microscale and mesoscale meteorological parameters (radiation, wind profiles, cloudiness) and their variations with time.

Although it is absolutely necessary to further increase the data material, to further develop and improve the scientific procedures of analysis, still some results are available even today which are possible of practical application by the meteorologist. This applies most of all where it is necessary, from the profiles of aerological data as supplied by radiosondes, to draw conclusions, quickly and directly, upon the conditions of vertical propagation of suspended matter.

VIII. OUTLOOK ON ADVANCED STUDIES IN THE NEAR FUTURE

1. General

Since the methodism for recording the exchange conditions up to 3000 m a.s.l. is now completely commanded and fully developed, it would be the obvious next step to expand the investigations at least up to and including the tropopause level. This expansion is further encouraged by another fact:

A program is being carried under contract with US AEC at our institute, for the investigation of stratospheric-tropospheric exchange using the tracers Be7, P32, S35 plus fall-out heavy-metals, the concentration of which is recorded at Zugspitze station for 24 hours at a time (see (3)). The tropopause structures are analyzed with the aid of radio-sonde data from the

Atlantic Ocean and Europe, and attempts are made to calculate the trajectories.

So the following situation exists:

a) With the aid of cable-car telemetry systems we gain a precise insight into the exchange conditions obtaining between 0.7 and 3 km a.s.l.

b) With the aid of the above-mentioned tracers we can survey transportation processes from the stratosphere down to the upper troposphere.

If it were possible, now, by means of appropriate additional methods to also cover the exchange conditions between upper troposphere or, even better, between lower stratosphere and 3 km a.s.l., we would have the chance to completely investigate the overall exchange from the stratospheric deposits at 10 or 20 km down to the surface of the earth at 0.7 km a.s.l. Such an expansion of our research program would increase our yield of findings by a multiple in regard to the vital problem of the atmospheric aerosol exchange.

2. Procedures to be applied

a) Lower Troposphere

The procedures per 1) - 5) will be applied without restriction during the continuation period.

b) 3 km a.s.l. up to lower stratosphere

The only one but the most effective and useful method to present itself is a combination of Rawinsonde with Lidar. Under good weather conditions and with a powerful Lidar, aerosol structures as far as the Junge layer at approx. 15 km may be covered and observed in time. The aerological data necessary for the scientific analysis of the aerosol movements are supplied by a special Rawinsonde of our own. The technical requirements for

such an essential and methodic expansion are presently being reviewed. Already now, some preparations are being made, such as the construction of a balloon filling hall adjacent to the new institute building (for radiosonde balloons), the construction of which has just begun, and the erection of a Lidar observation and set-up room on the roof platform of the institute. Negotiations with suppliers have been conducted and technical details agreed on.

IX. REFERENCES

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Atmospheric Aerosols between 700 and 3000 m a.s.l., Part IV., Contract DAJA-37-69C-1357, July 1970.

2) Reiter, R., R. Sládkovič and W. Carnuth:
On Fine Structures and Control of Vertical Aerosol Exchange between 700 and 3000 m a.s.l.
Arch. Met. Geophys. Bioklim. Ser. A (in print).

3) Reiter, R., R. Sládkovič; K. Pötzl, W. Carnuth and H.-J. Kanter:
Measurement of Airborne Radioactivity and its Meteorological Application.
Contract AT (30-1)-4061, Oct. 1970,
Arch. Met. Geophys. Bioklim. Ser. A (in print).

X. APPENDIX

1. Figures 1 - 48

2. Legends to the Figures 1 - 48

3. Individual Runs and Data Tables
   Examples A - J

4. Tables I - XII
   RaB concentration measured on the Zugspitze (Z), the Wank (W) and in Garmisch-Partenkirchen from July 1970 to June 1971

5. The Computer Program
   for computation of all necessary values from the original runs. Tables of results as examples, see 3.

1. Figures 1 - 48

Fig.1

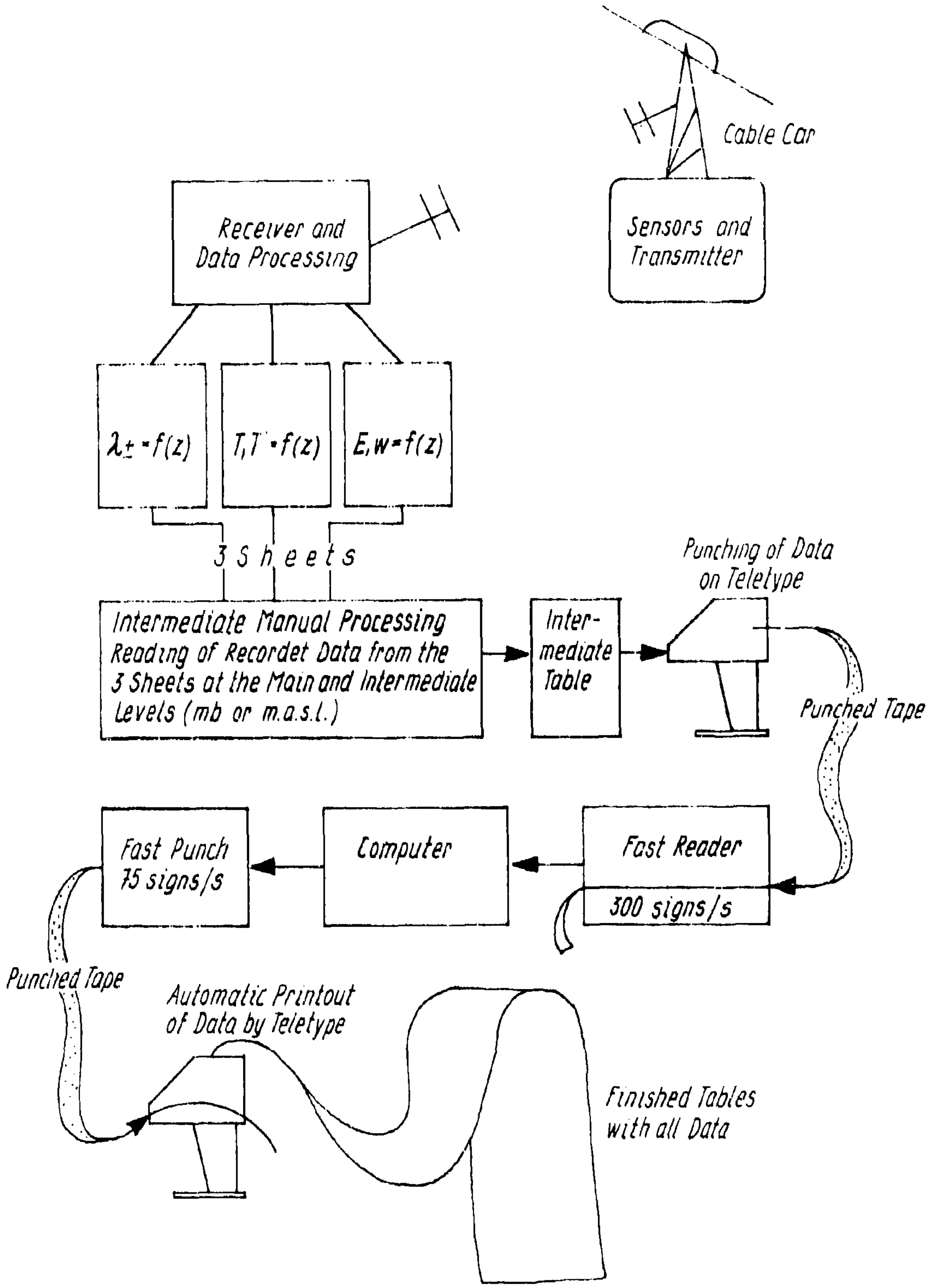

Cable Car
Sensors and Transmitter
Receiver and Data Processing
$\lambda_{\pm} = f(z)$
$T, T' = f(z)$
$E, w = f(z)$
3 Sheets
Intermediate Manual Processing Reading of Recordet Data from the 3 Sheets at the Main and Intermediate Levels (mb or m.a.s.l.)
Inter-mediate Table
Punching of Data on Teletype
Punched Tape
Fast Reader
300 signs/s
Computer
Fast Punch 75 signs/s
Punched Tape
Automatic Printout of Data by Teletype
Finished Tables with all Data

Fig. 2

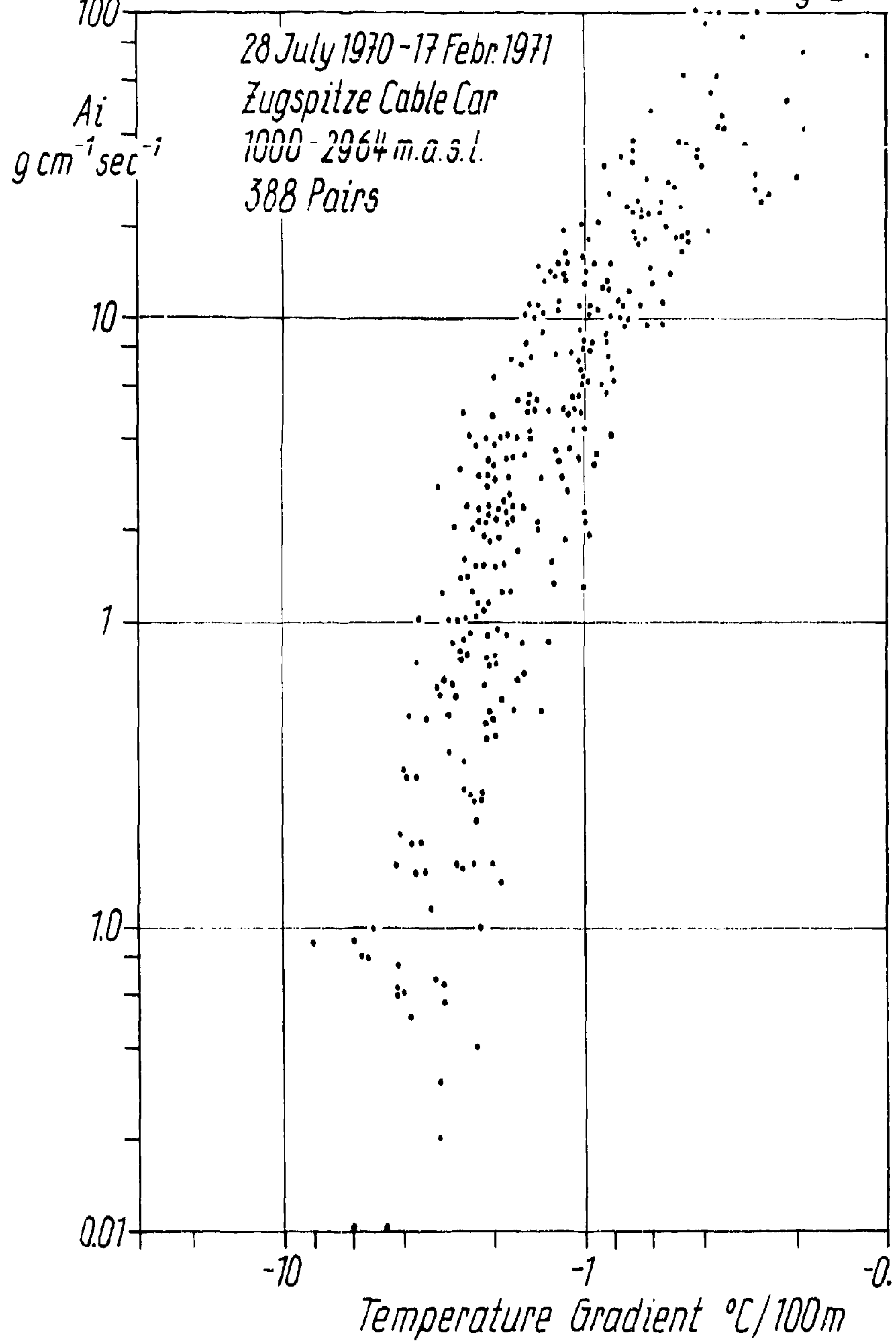

28 July 1970 - 17 Febr. 1971
Zugspitze Cable Car
1000 - 2964 m.a.s.l.
388 Pairs
Ai
g cm⁻¹ sec⁻¹
100
10
1
1.0
0.01
-10
-1
-0.1
Temperature Gradient °C/100m

Fig. 3

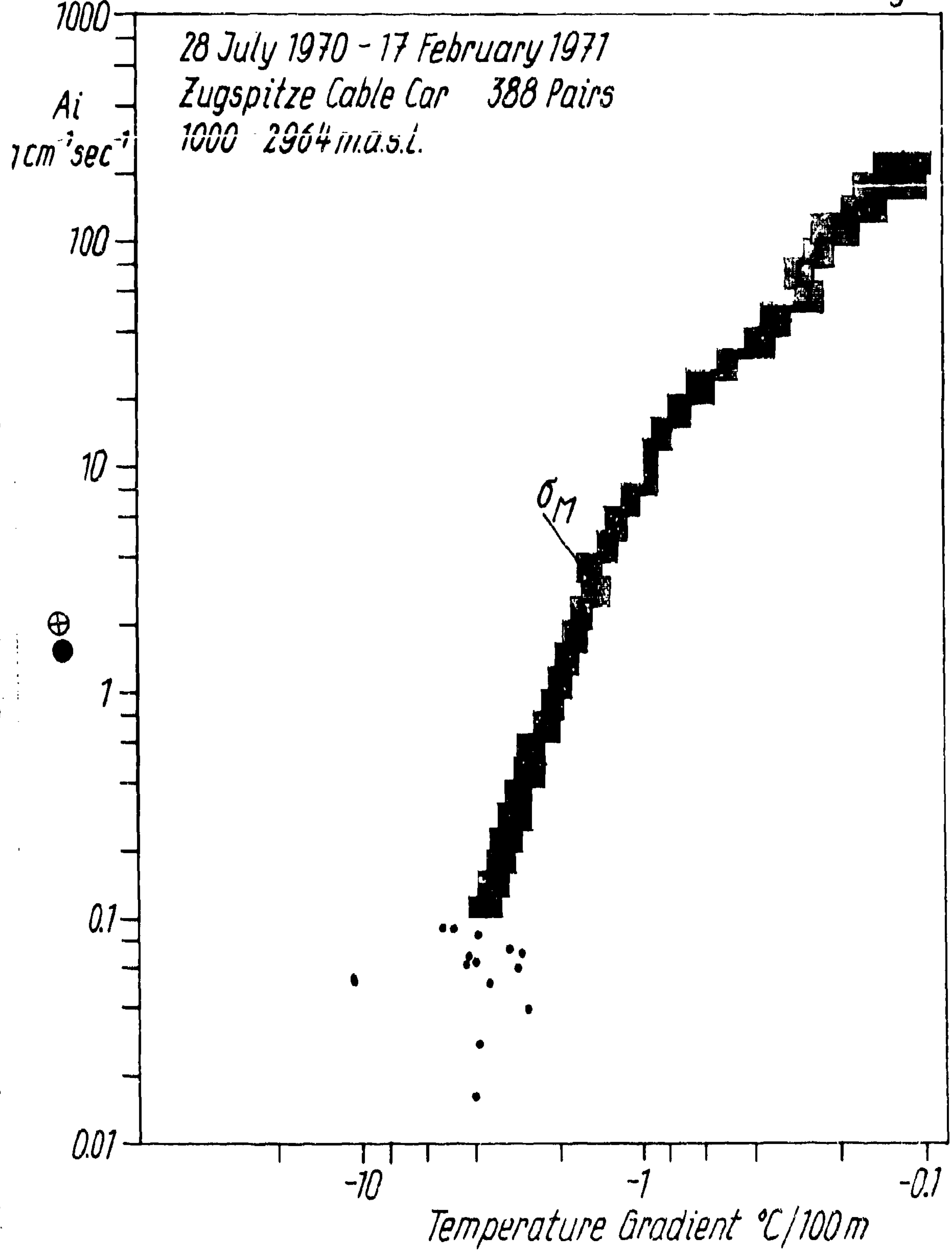

28 July 1970 - 17 February 1971
Zugspitze Cable Car 388 Pairs
1000 2964 m.a.s.l.
Ai
1cm⁻¹sec⁻¹
1000
100
10
1
0.1
0.01
σM
-10
-1
-0.1
Temperature Gradient °C/100m

Fig 4

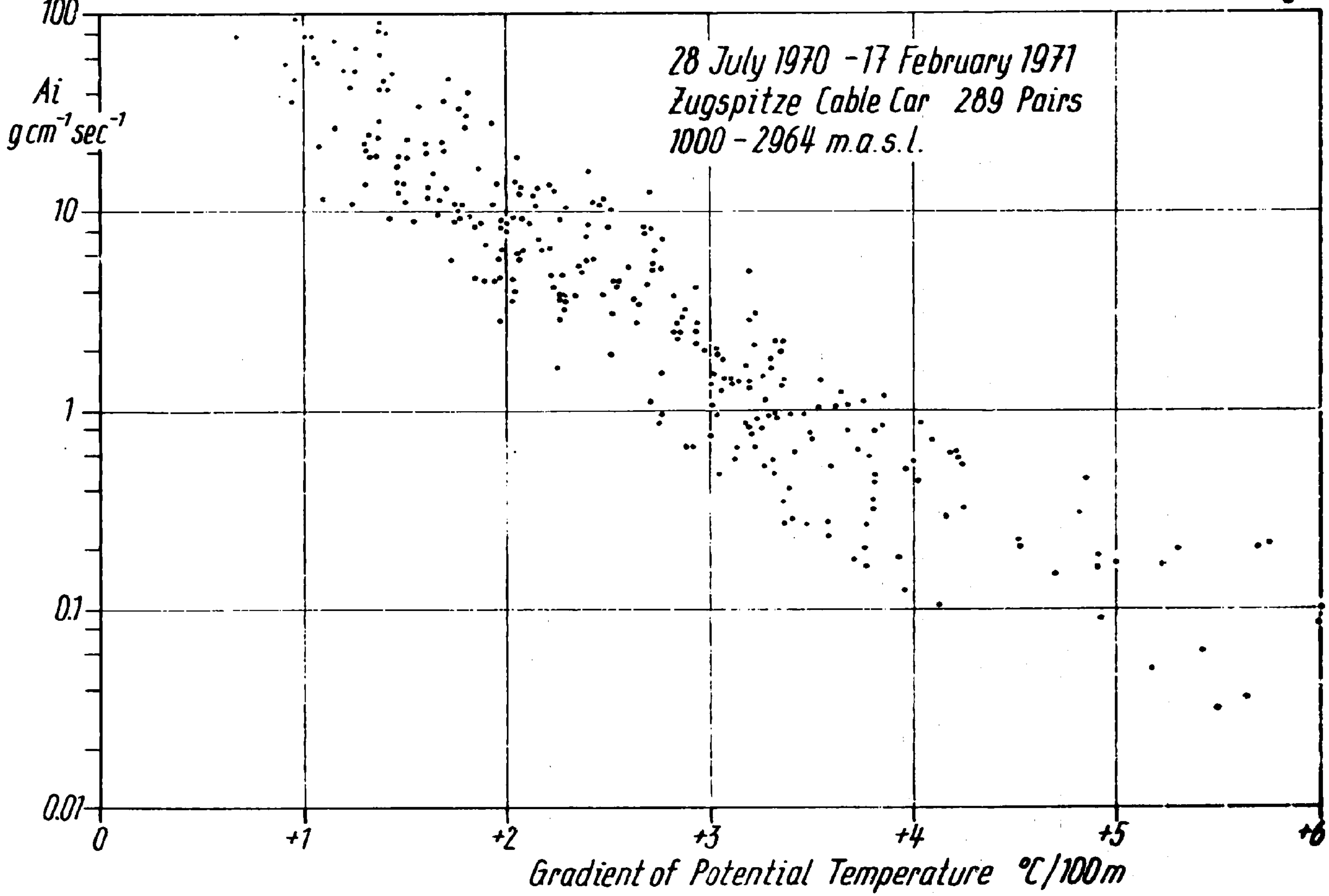
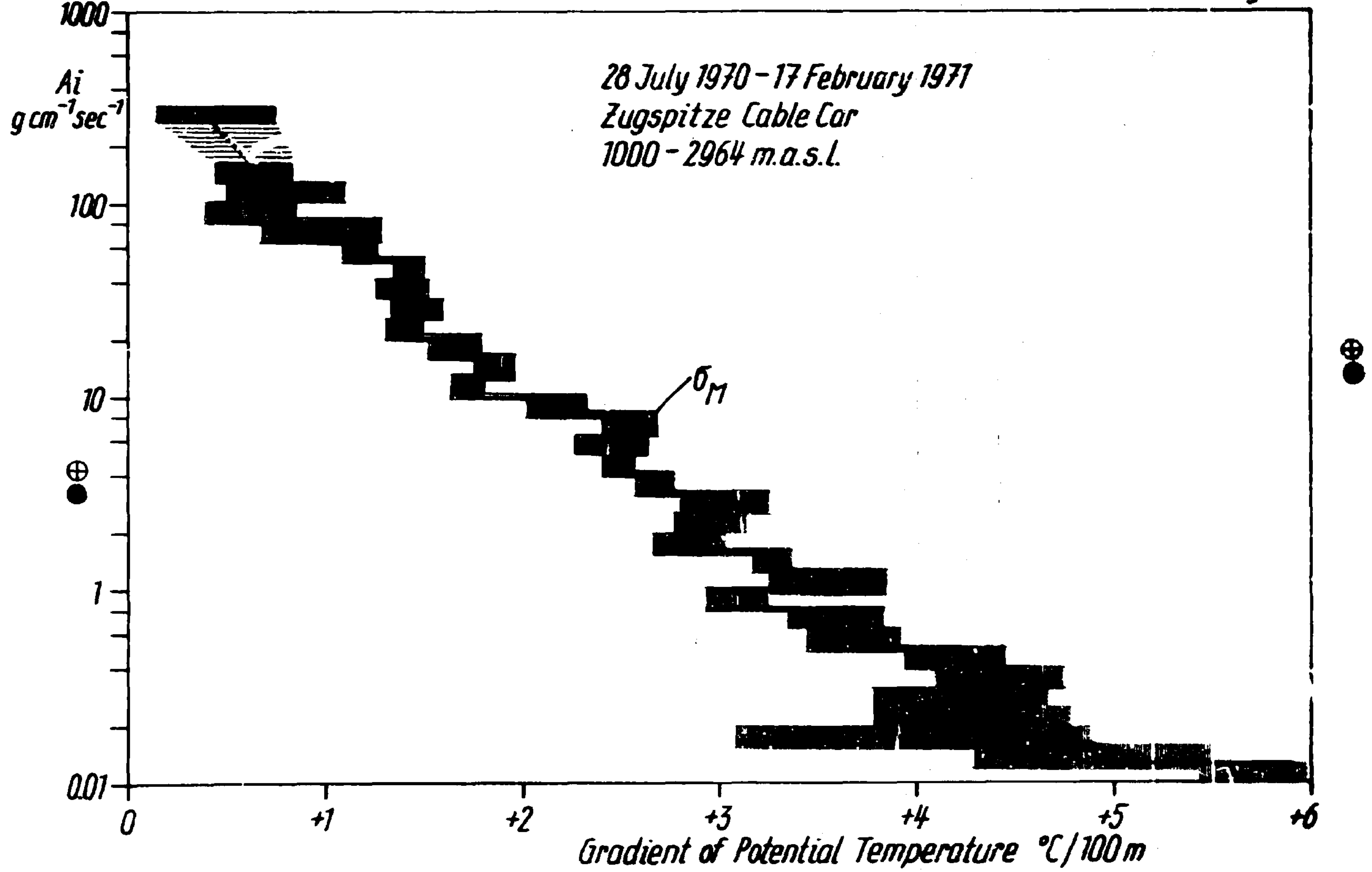
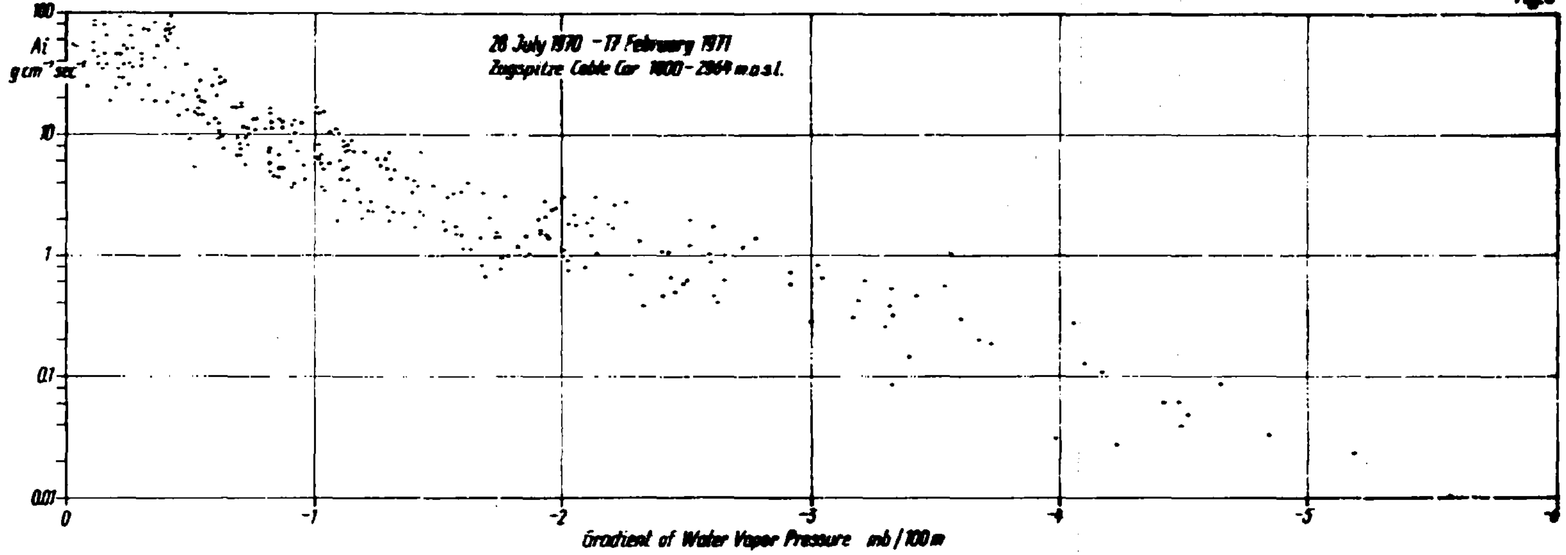

28 July 1970 - 17 February 1971
Zugspitze Cable Car 289 Pairs
1000 - 2964 m.a.s.l.
Ai
g cm⁻¹ sec⁻¹
100
10
1
0.1
0.01
0
+1
+2
+3
+4
+5
+6
Gradient of Potential Temperature °C/100m

Fig. 5



1000
100
10
1
0.01
Ai
g cm⁻¹ sec⁻¹
28 July 1970 – 17 February 1971
Zugspitze Cable Car
1000 – 2964 m.a.s.l.
σM
0
+1
+2
+3
+4
+5
+6
Gradient of Potential Temperature °C/100 m

Fig. 6



28 July 1970 – 17 February 1971
Zugspitze Cable Car 1800 – 2964 m.a.s.l.
100
Ai
g cm⁻² sec⁻¹
10
1
0.1
0.01
0
-1
-2
-3
-4
-5
-6
Gradient of Water Vapor Pressure mb/100 m

Fig. 3

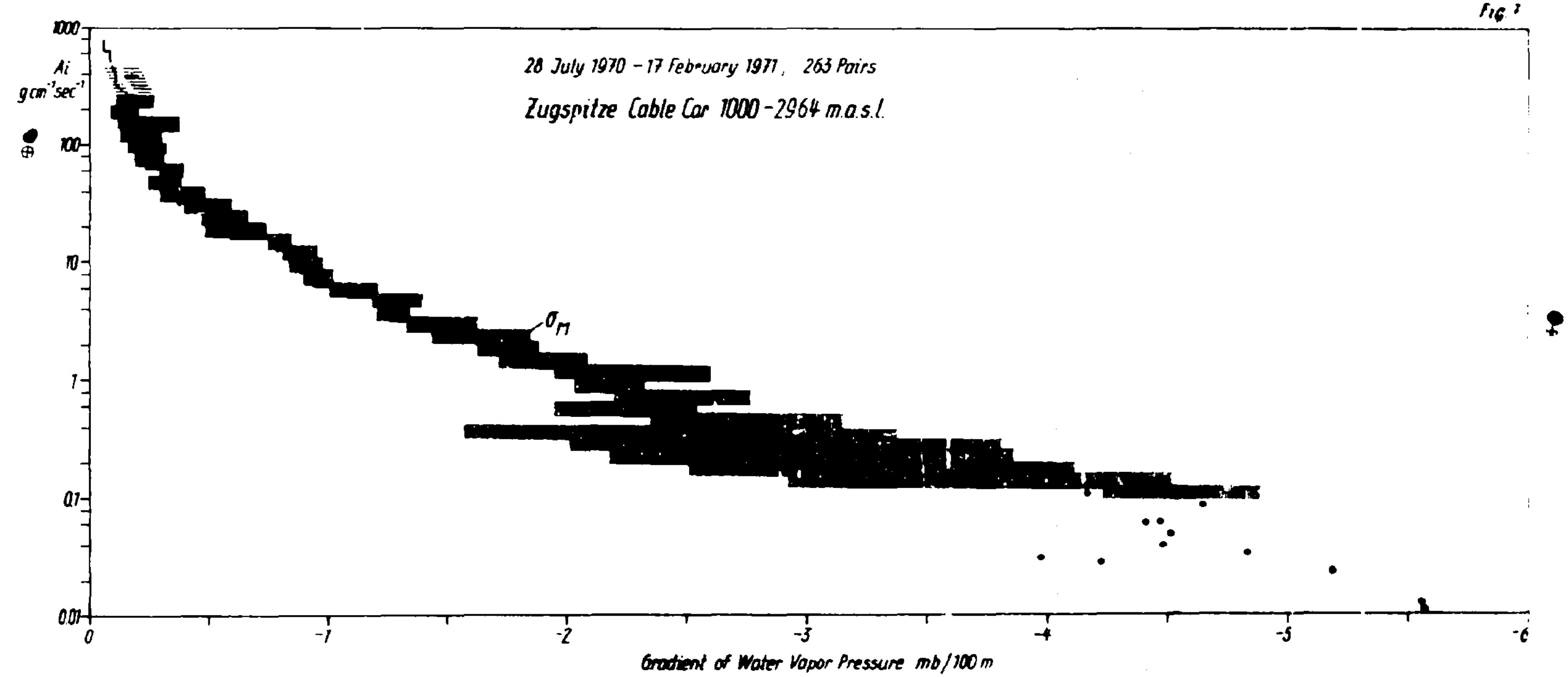
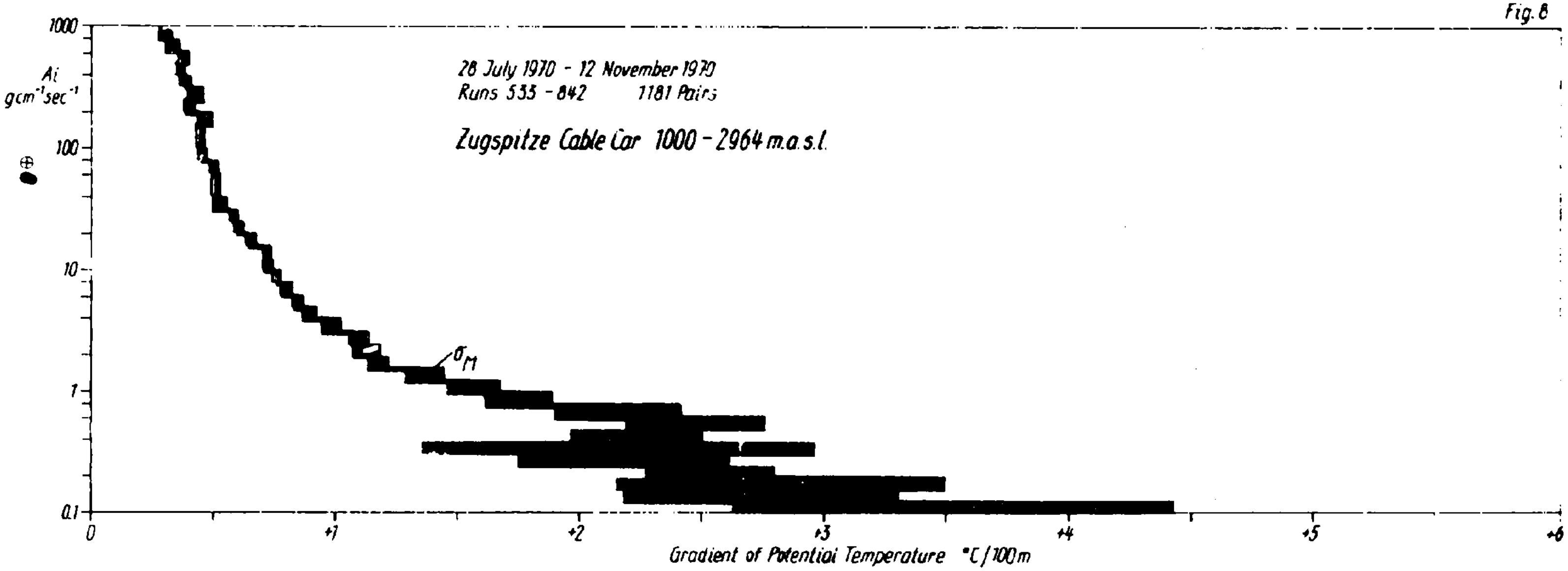
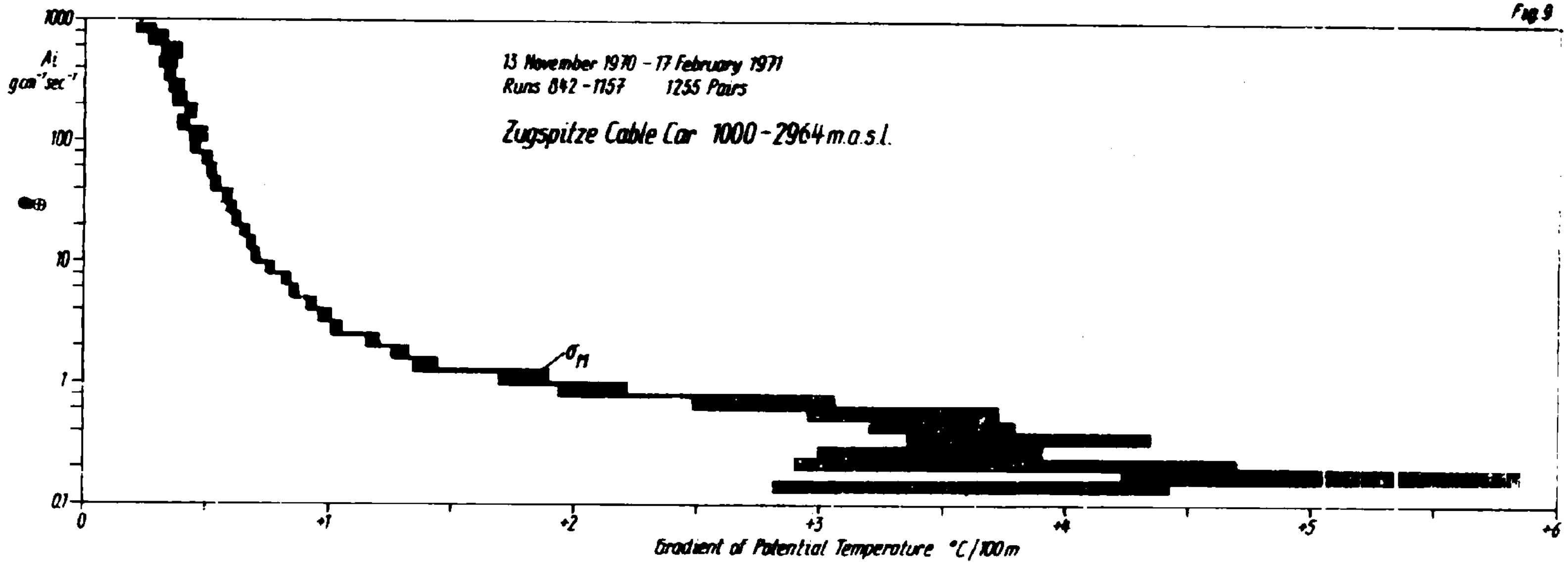

28 July 1970 - 17 February 1971, 263 Pairs
Zugspitze Cable Car 1000-2964 m.a.s.l.
Ai
gcm⁻¹sec⁻¹
1000
100
10
1
0.1
0.01
σM
0
-1
-2
-3
-4
-5
-6
Gradient of Water Vapor Pressure mb/100m

Fig. 8



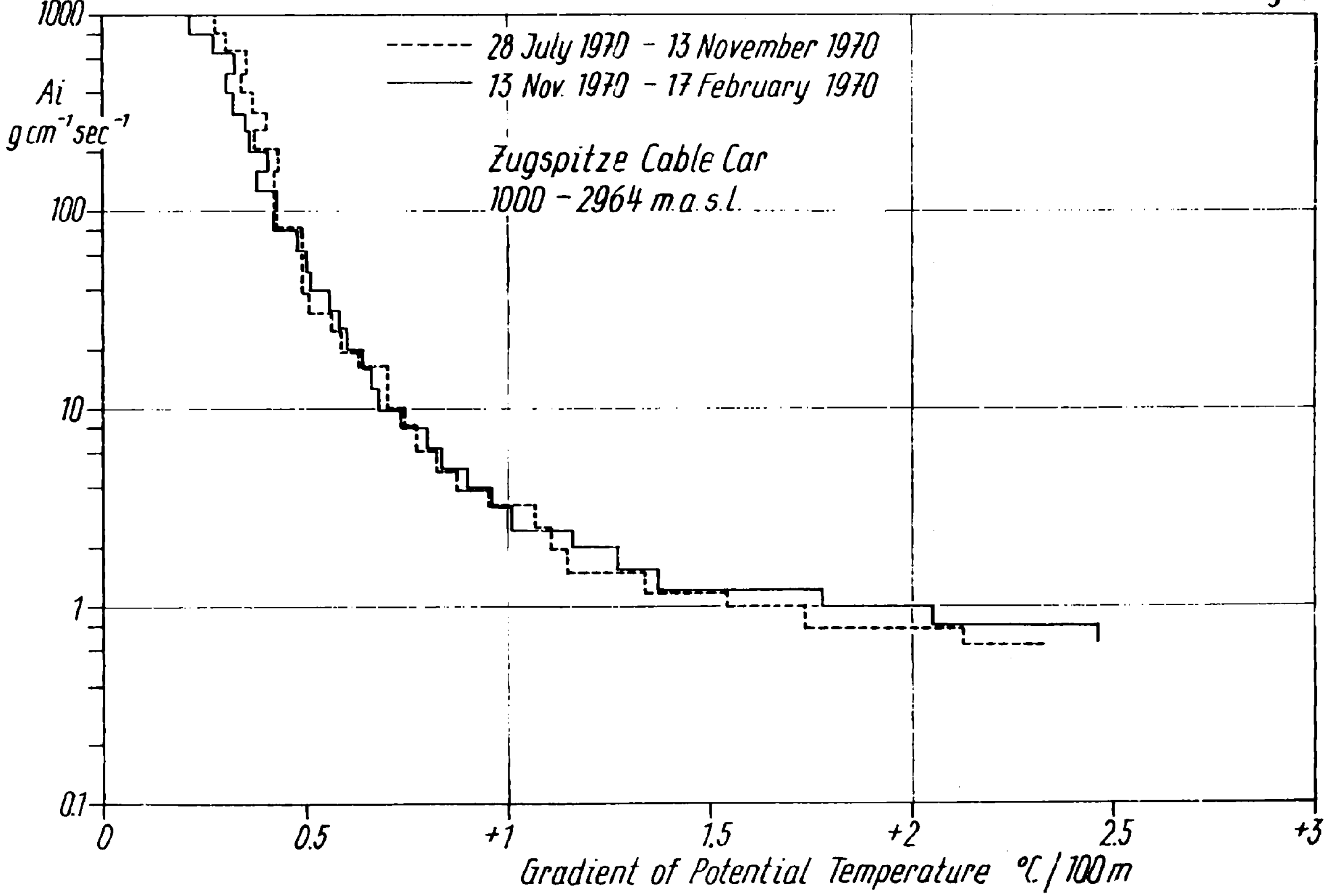
1000
100
10
1
0.1
Ai
gcm⁻¹sec⁻¹
28 July 1970 - 12 November 1970
Runs 533 - 842 1181 Pairs
Zugspitze Cable Car 1000 - 2964 m.a.s.l.
σM
0
+1
+2
+3
+4
+5
+6
Gradient of Potential Temperature °C/100m

Fig. 9

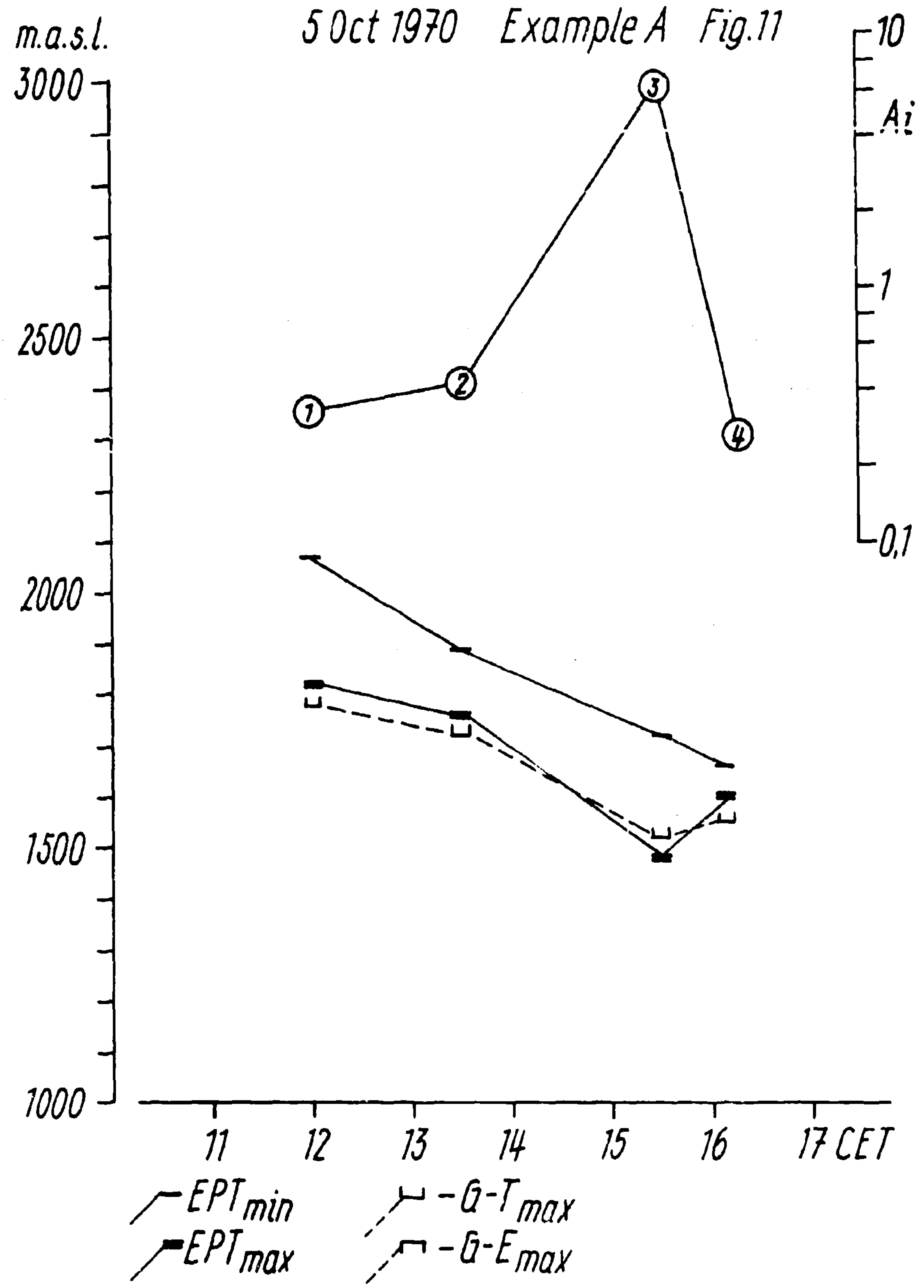


13 November 1970 - 17 February 1971
Runs 842 - 1157 1255 Pairs
Zugspitze Cable Car 1000 - 2964 m.a.s.l.
Ai
gcm⁻¹sec⁻¹
1000
100
10
1
0.1
σM
0
+1
+2
+3
+4
+5
+6
Gradient of Potential Temperature °C/100m

Fig.10

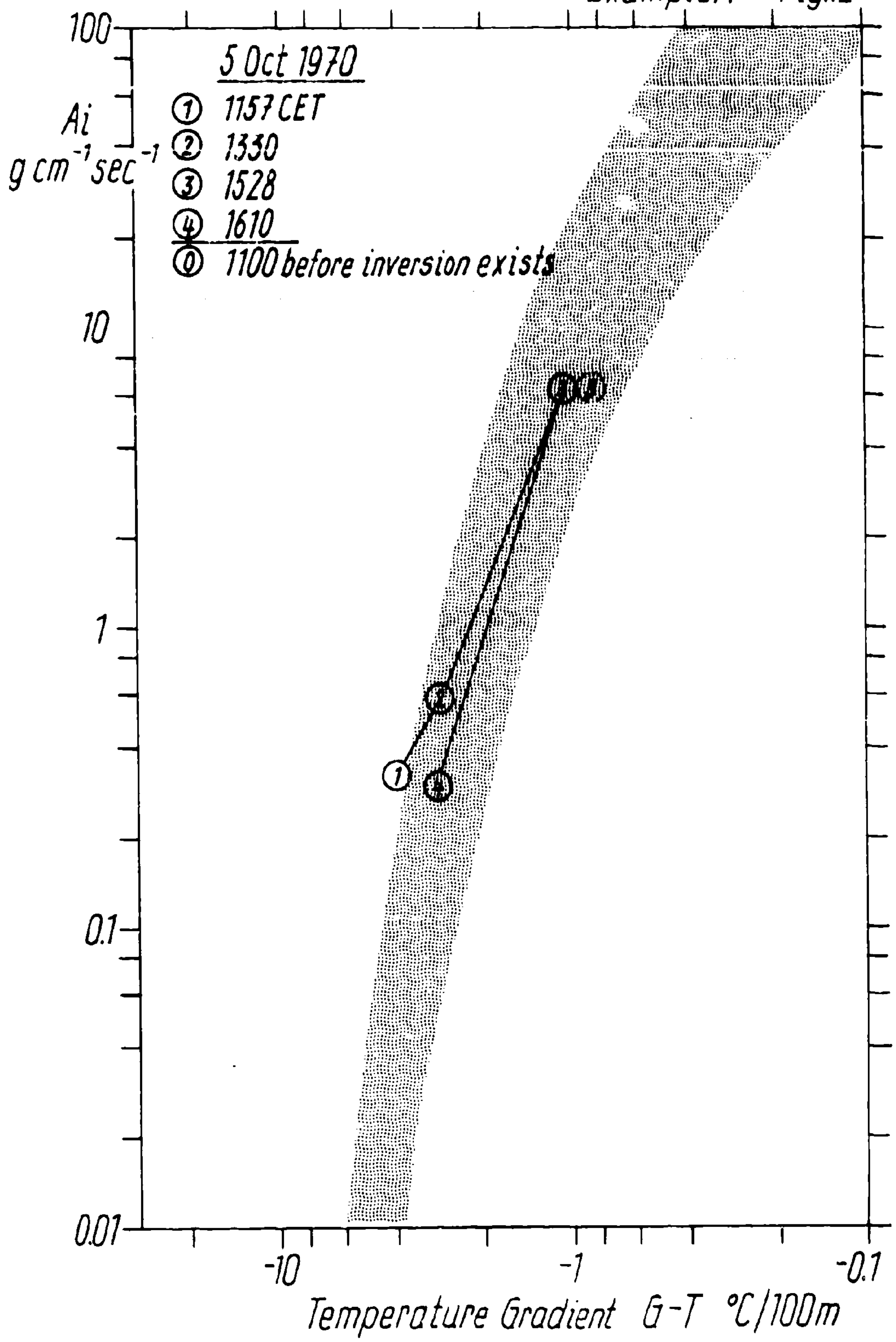


28 July 1970 - 13 November 1970
13 Nov. 1970 - 17 February 1970
Zugspitze Cable Car
1000 - 2964 m.a.s.l.
1000
Ai
g cm⁻¹ sec⁻¹
100
10
1
0.1
0
0.5
+1
1.5
+2
2.5
+3
Gradient of Potential Temperature °C / 100 m

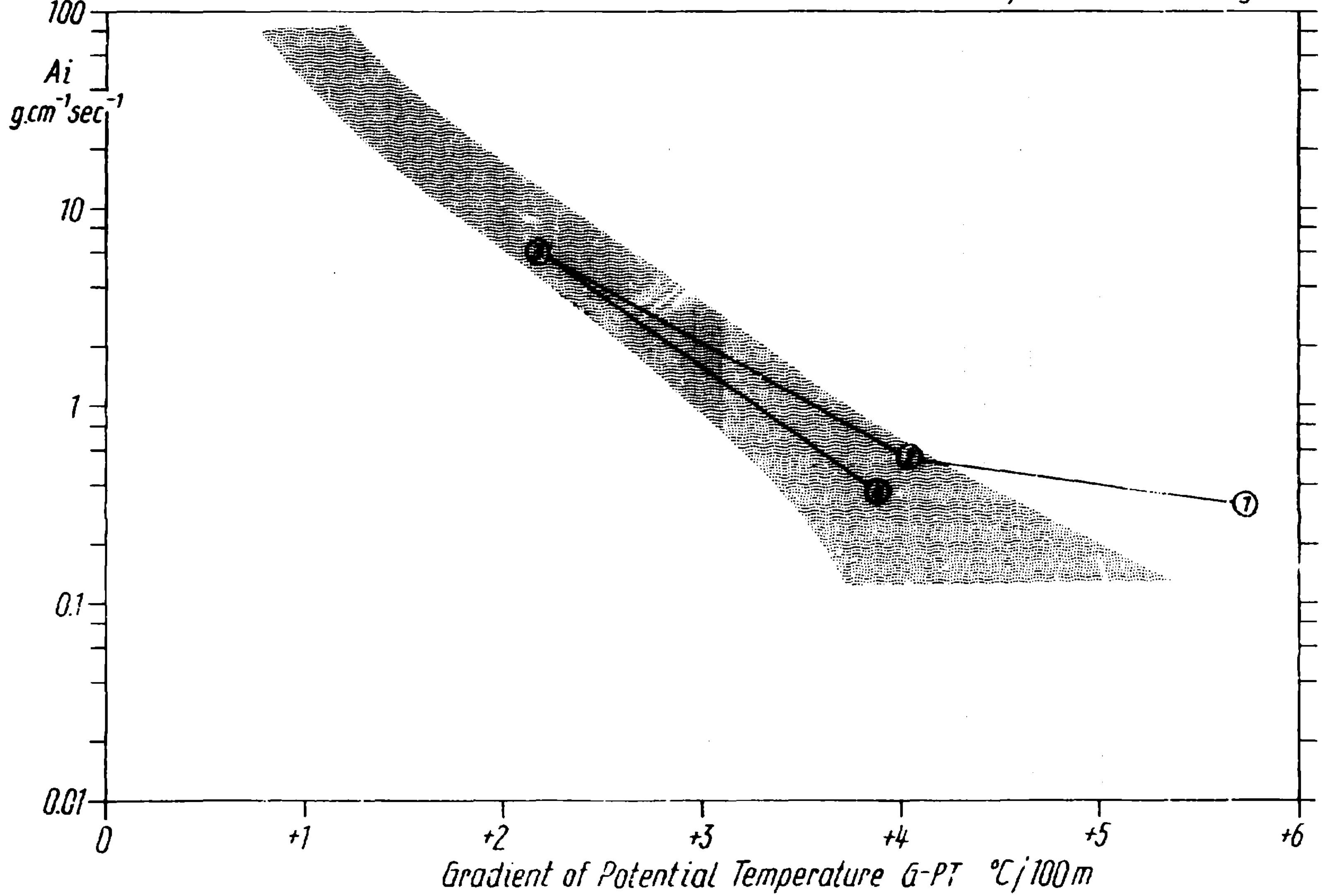


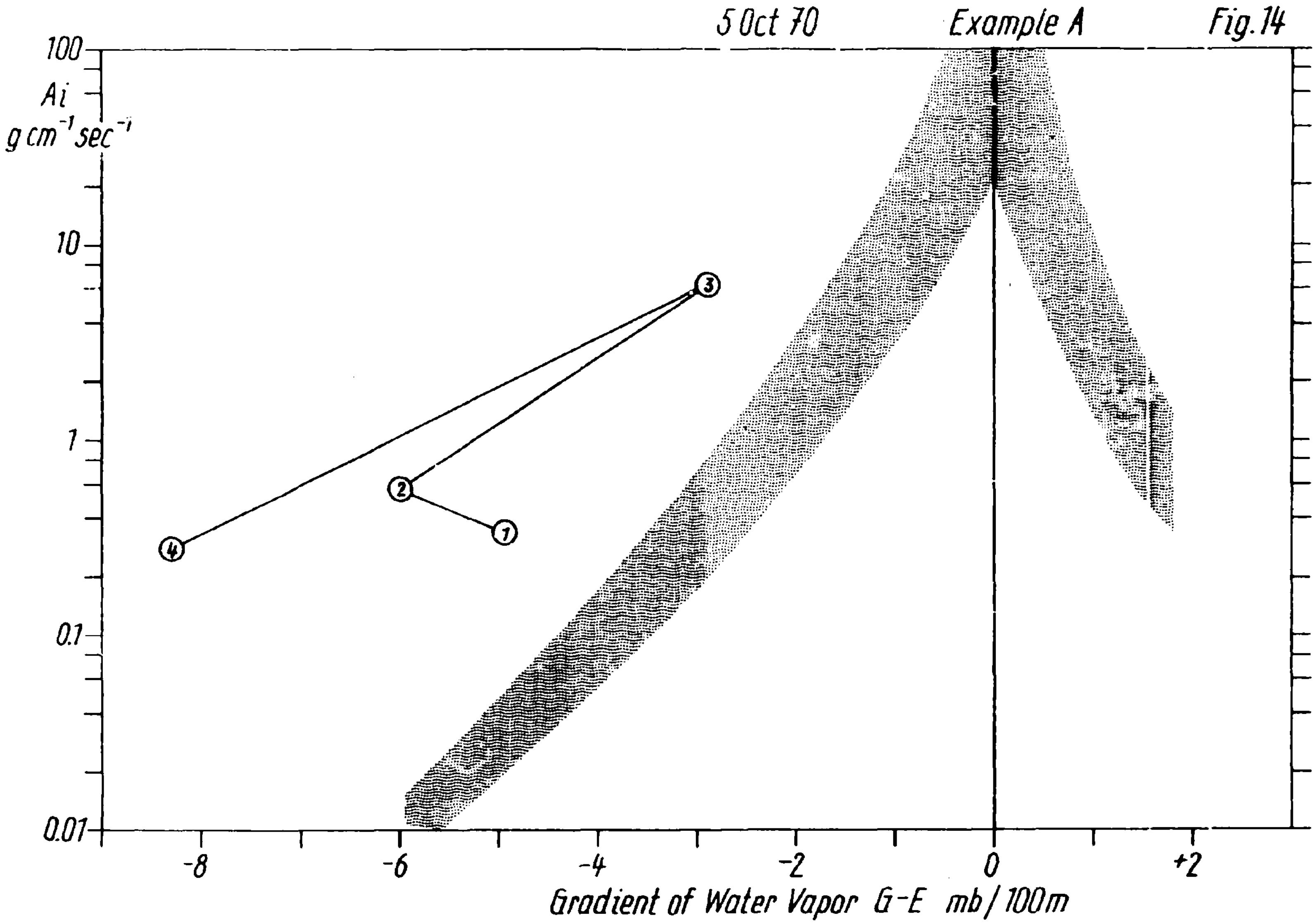
m.a.s.l.
5 Oct 1970 Example A Fig.11
10
Ai
1
0,1
3000
2500
2000
1500
1000
11
12
13
14
15
16
17 CET
EPT$_{min}$
EPT$_{max}$
-G-T$_{max}$
-G-E$_{max}$

Example A Fig. 12



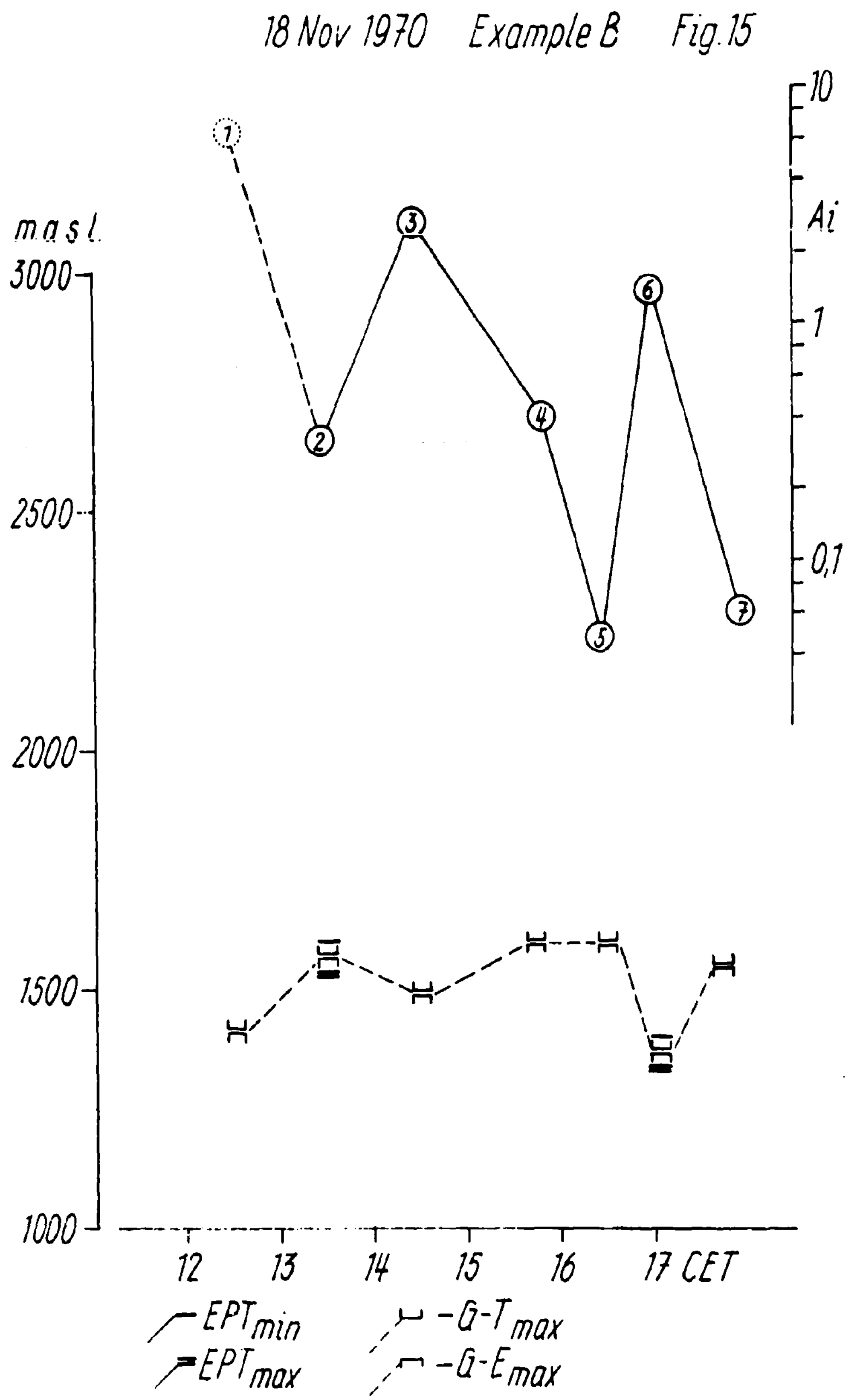
5 Oct 1970 Example A Fig.13





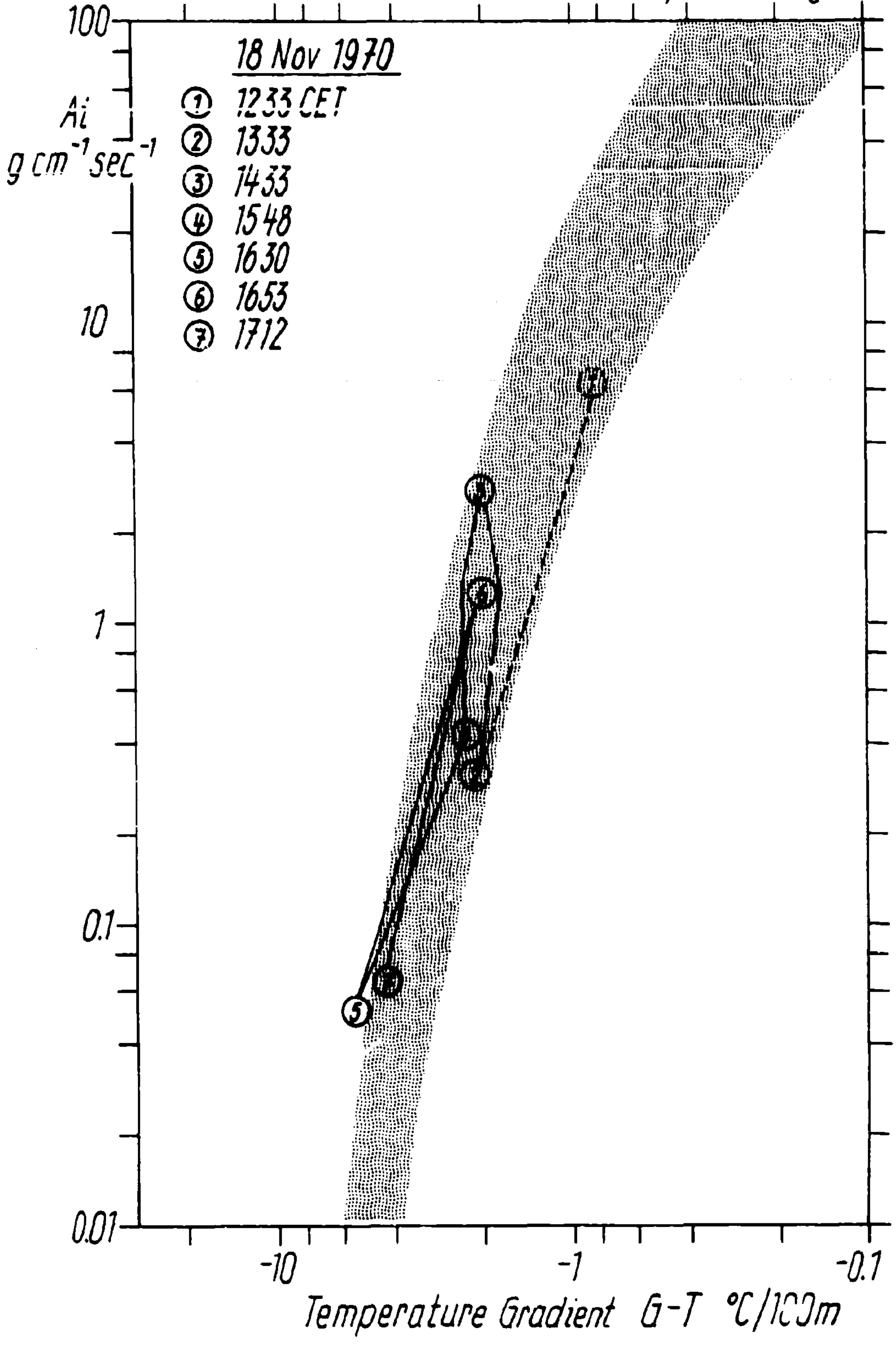
5 Oct 70
Example A
100
Ai
g cm⁻¹ sec⁻¹
10
1
0.1
0.01
-8
-6
-4
-2
0
+2
Gradient of Water Vapor G-E mb/100m

Fig. 14

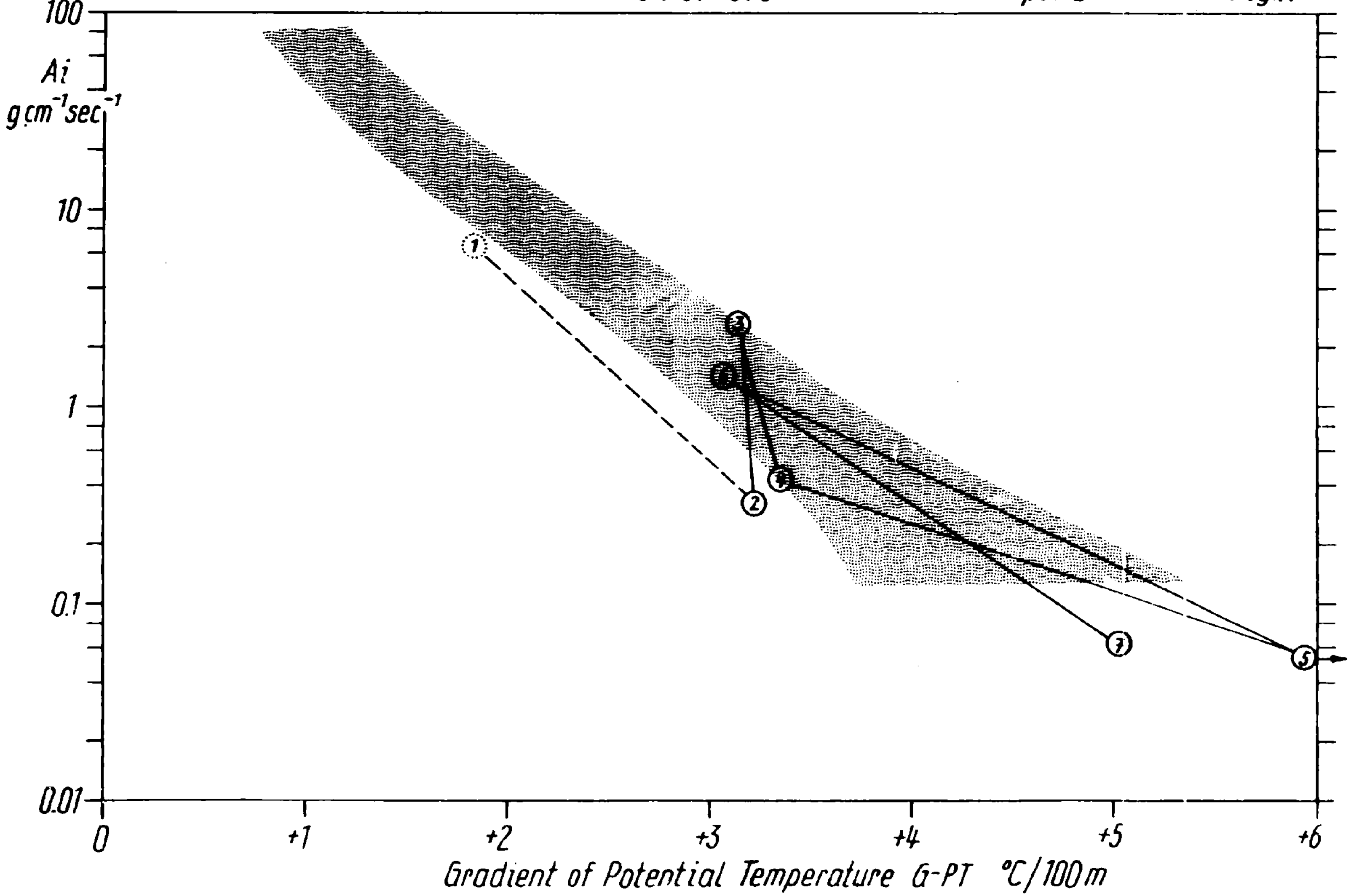


18 Nov 1970 Example B Fig.15
m a s l.
3000
2500
2000
1500
1000
10
Ai
1
0,1
1
2
3
4
5
6
7
12
13
14
15
16
17 CET
EPT$_{min}$
EPT$_{max}$
-G-T$_{max}$
-G-E$_{max}$

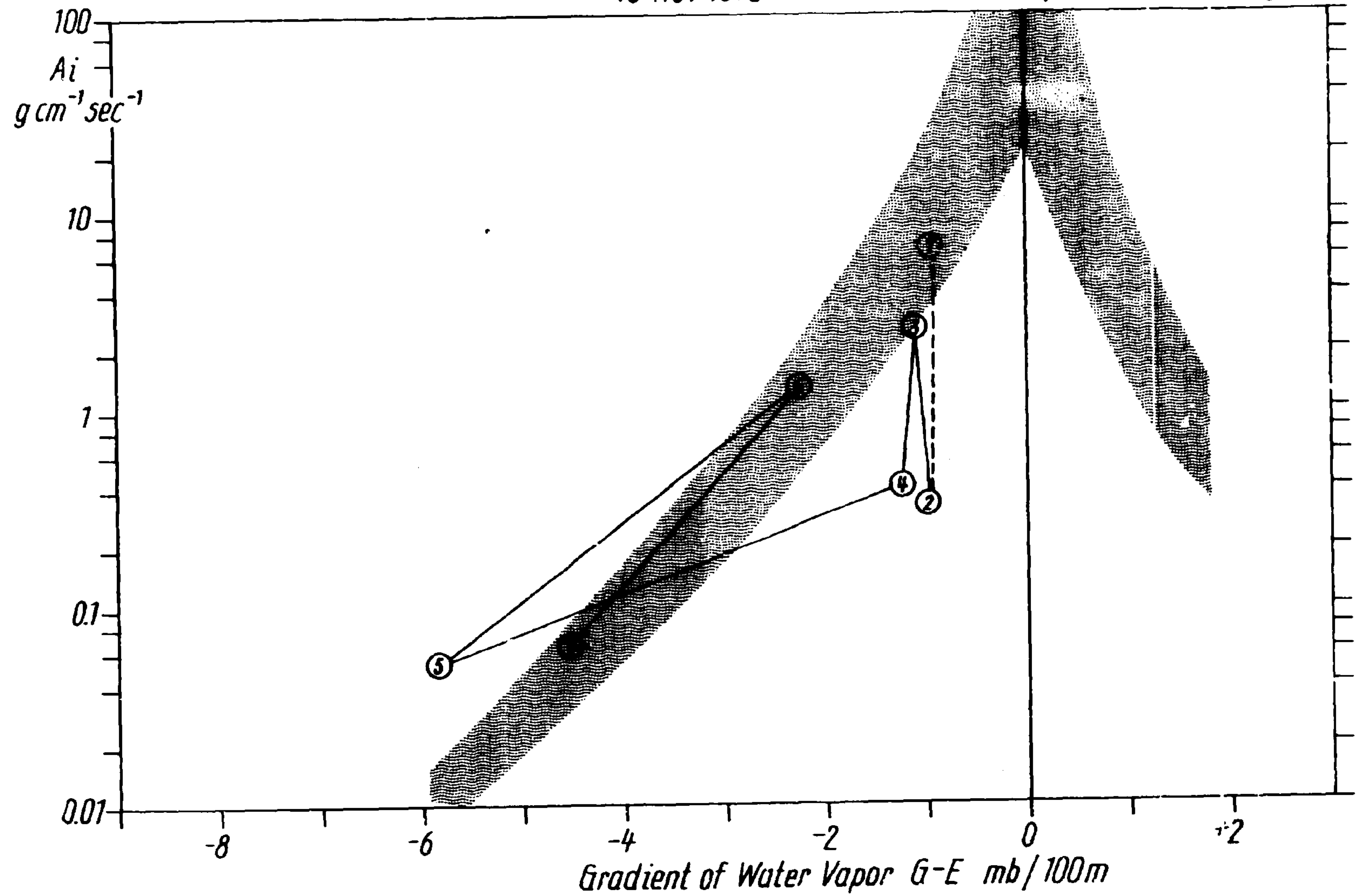
Example B Fig.16



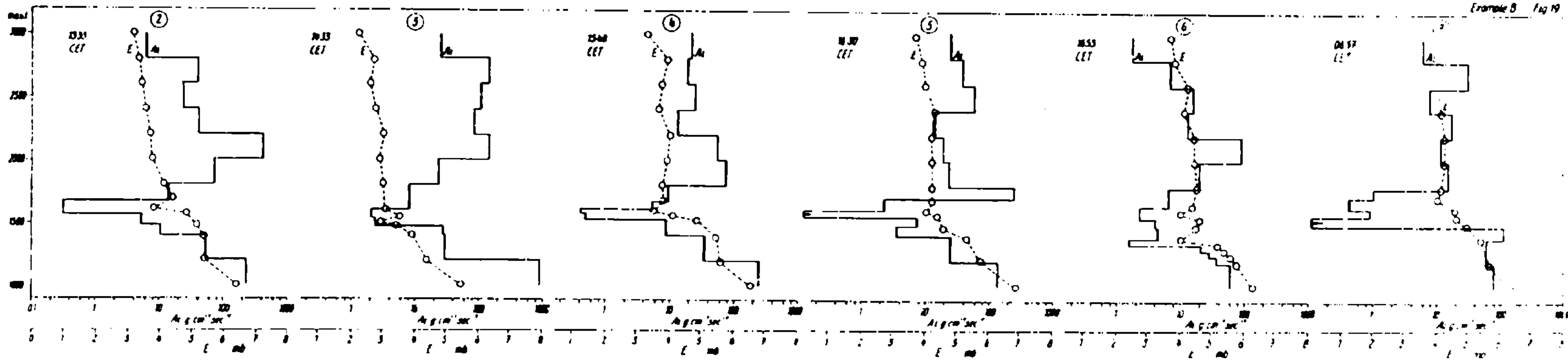
18 Nov 1970 Example B Fig.17



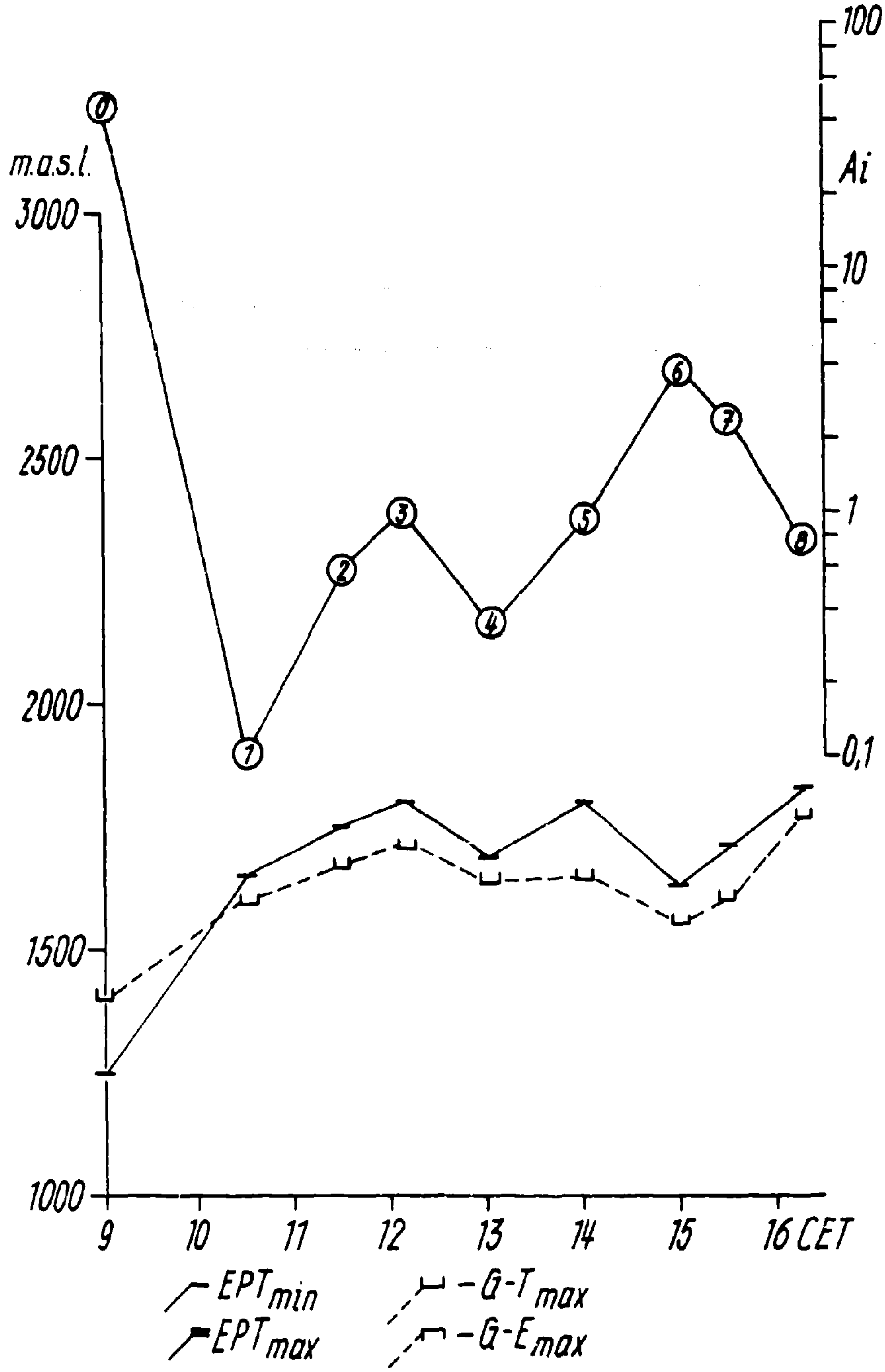
18 Nov 1970 Example B Fig.18

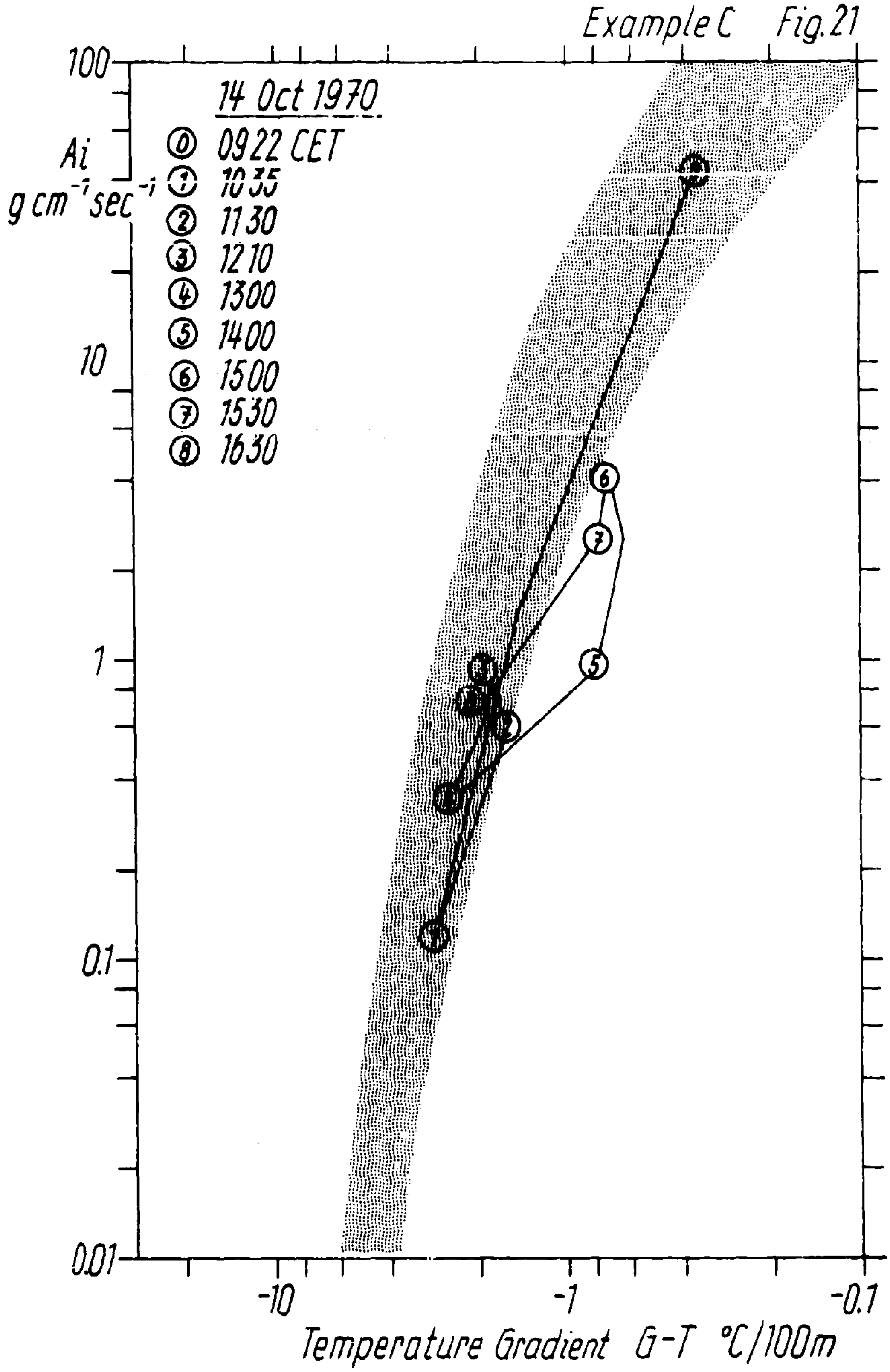


Example 8 Fig 19

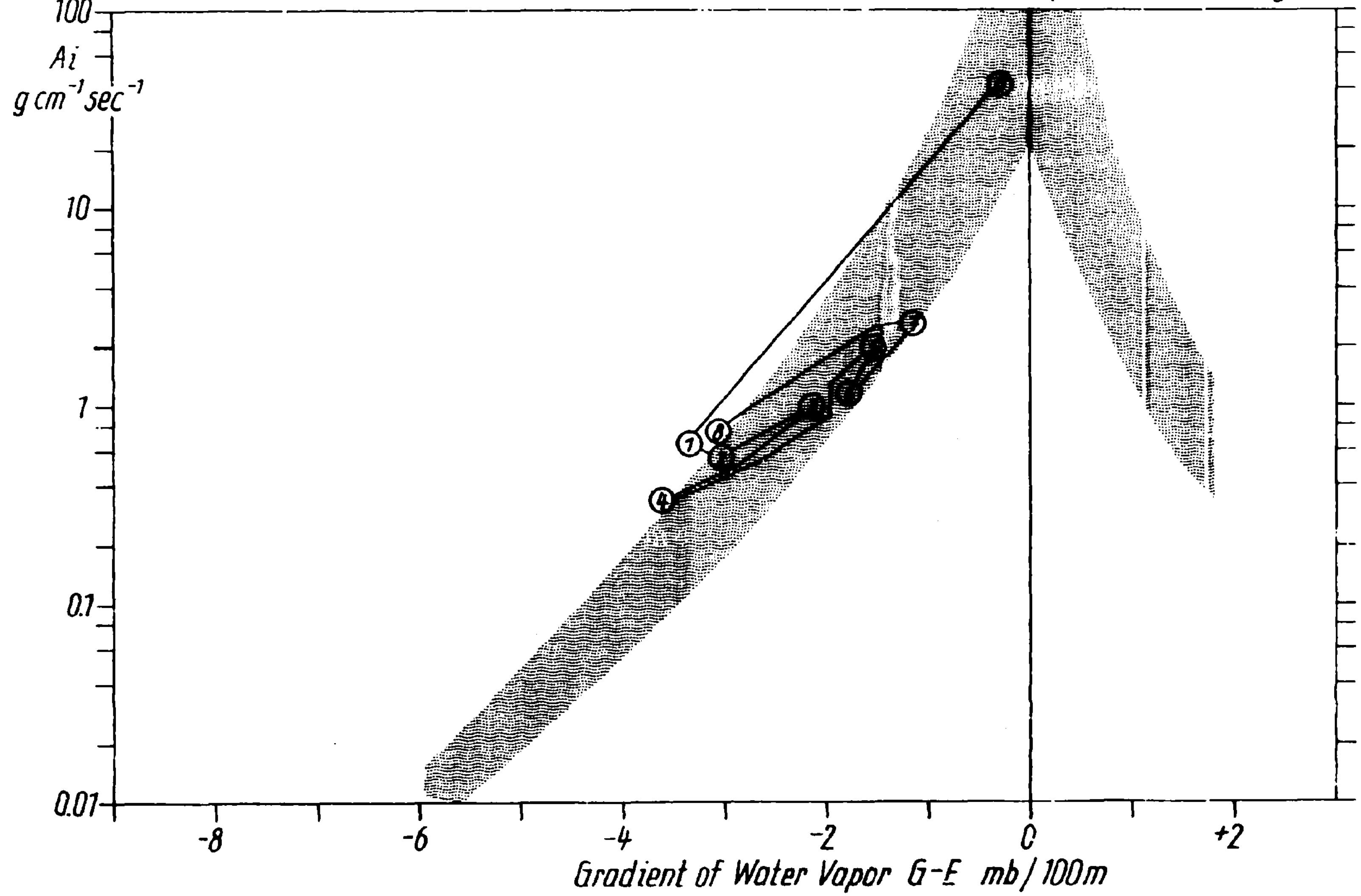


14 Oct 1970 Example C Fig. 20

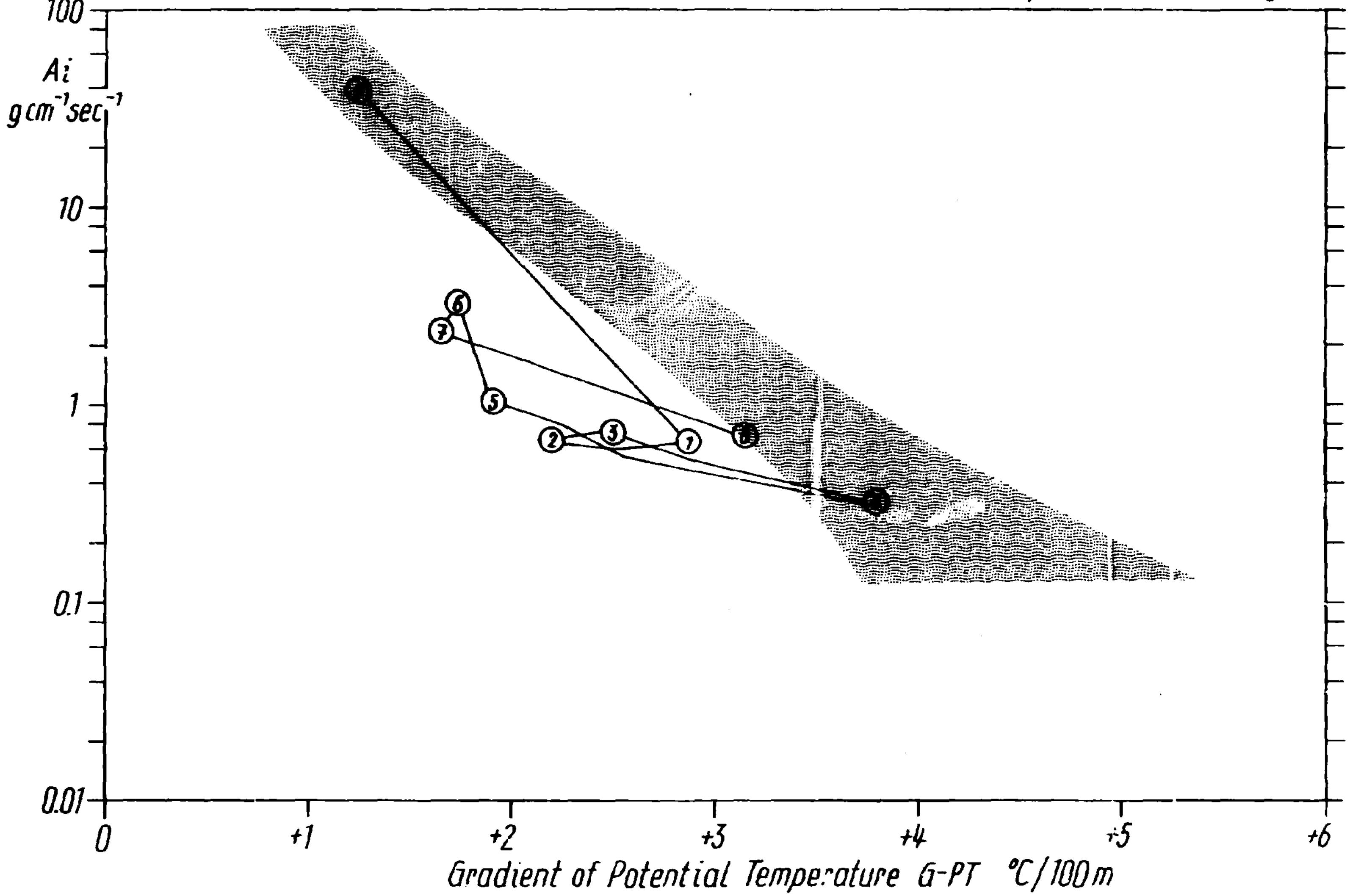



Example C Fig.21
14 Oct 1970
0 0922 CET
1 1035
2 1130
3 1210
4 1300
5 1400
6 1500
7 1530
8 1630
Ai
g cm⁻¹ sec⁻¹
100
10
1
0.1
0.01
-10
-1
-0.1
Temperature Gradient G-T °C/100m

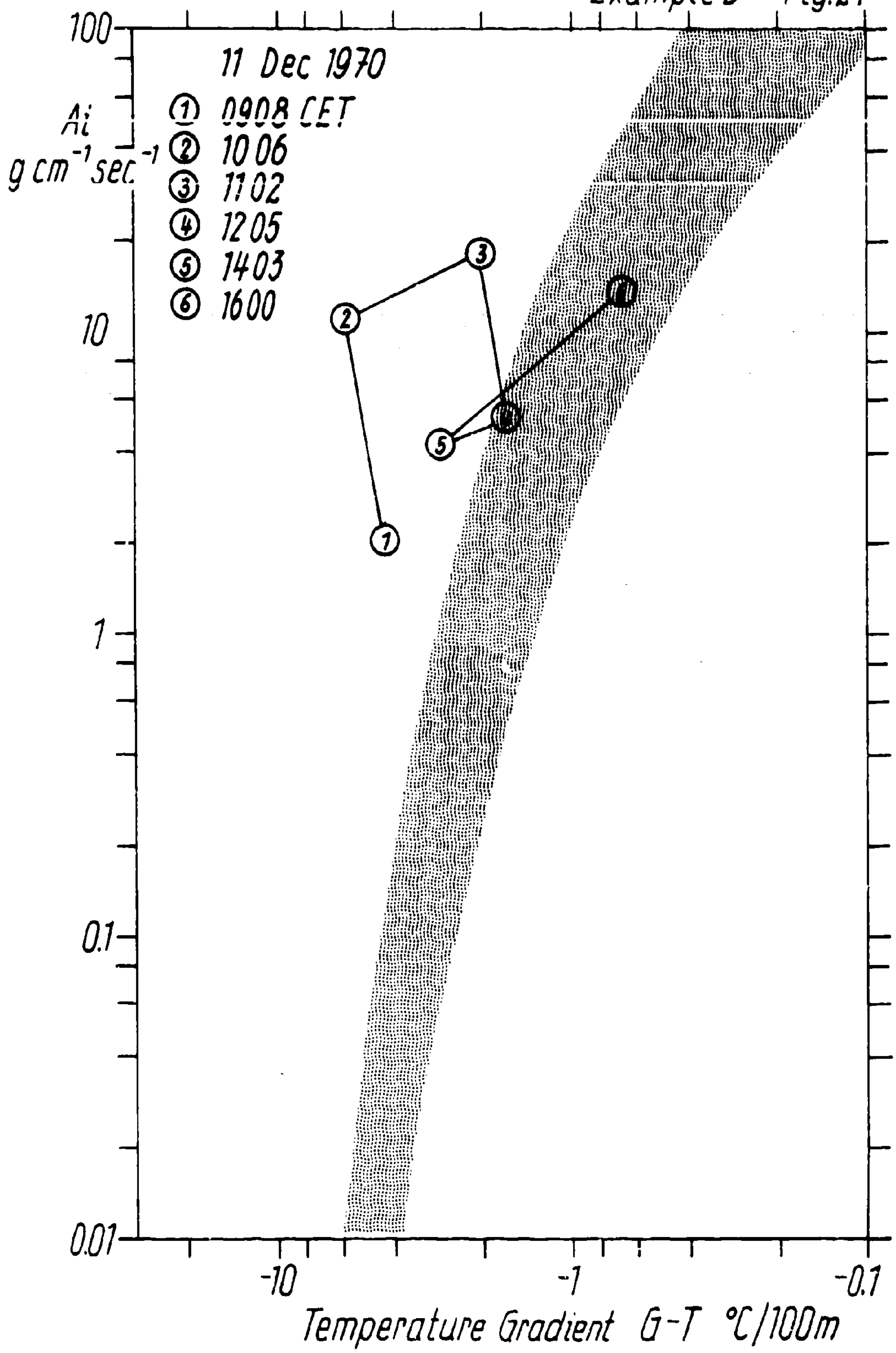
14 Oct 1970 Example C Fig. 22



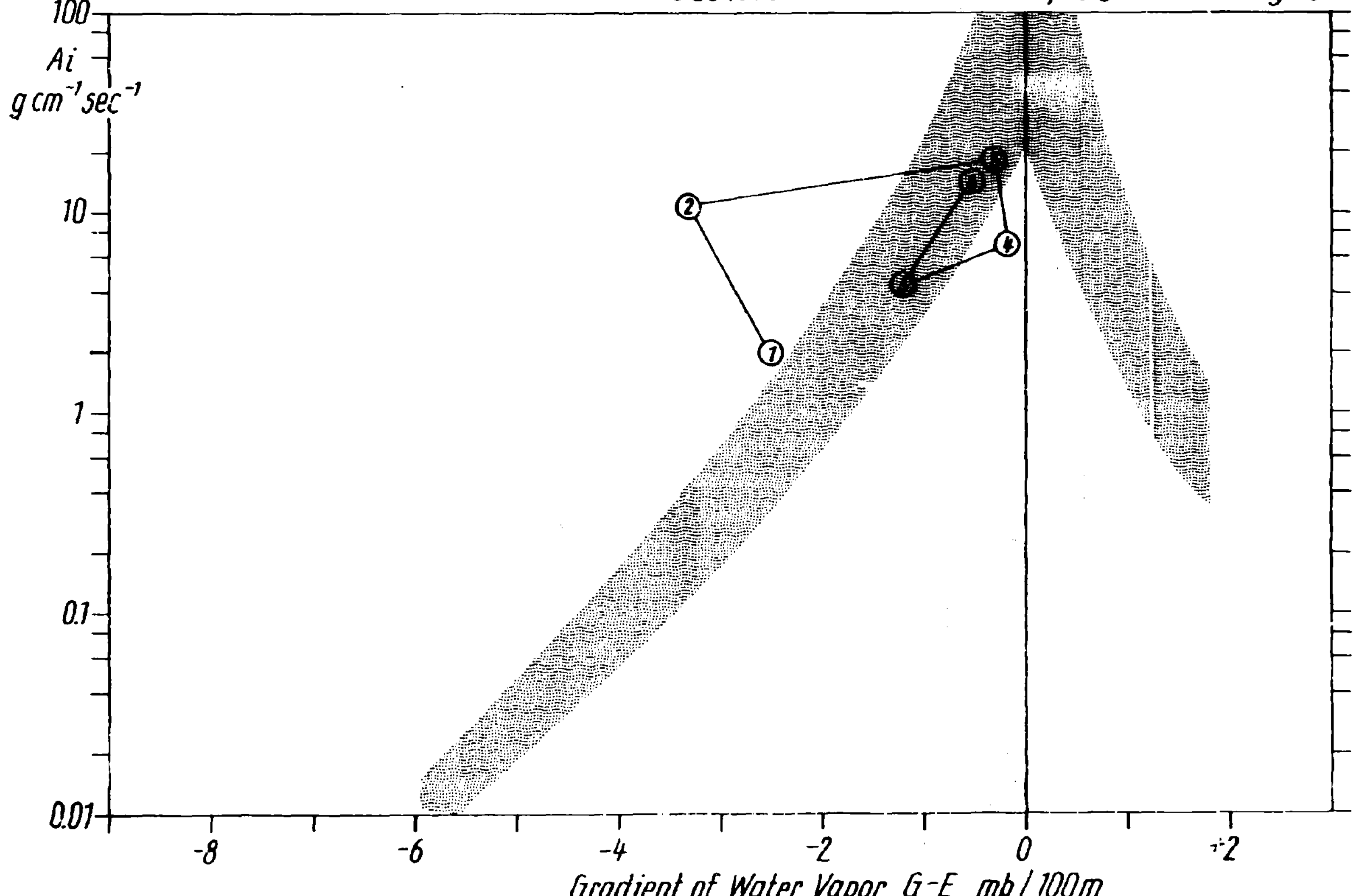
14 Oct 1970 Example C Fig.23



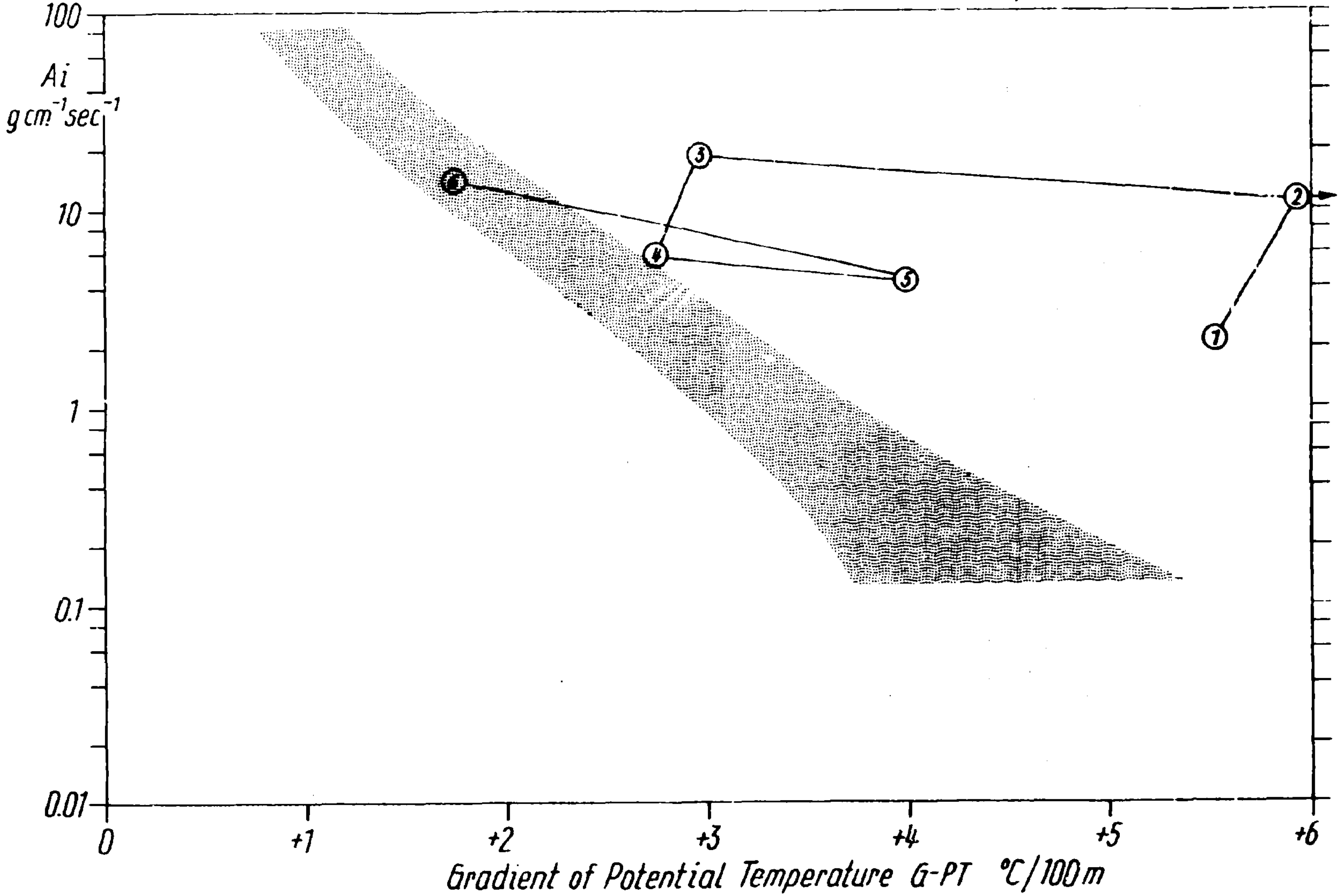
Example D Fig. 24



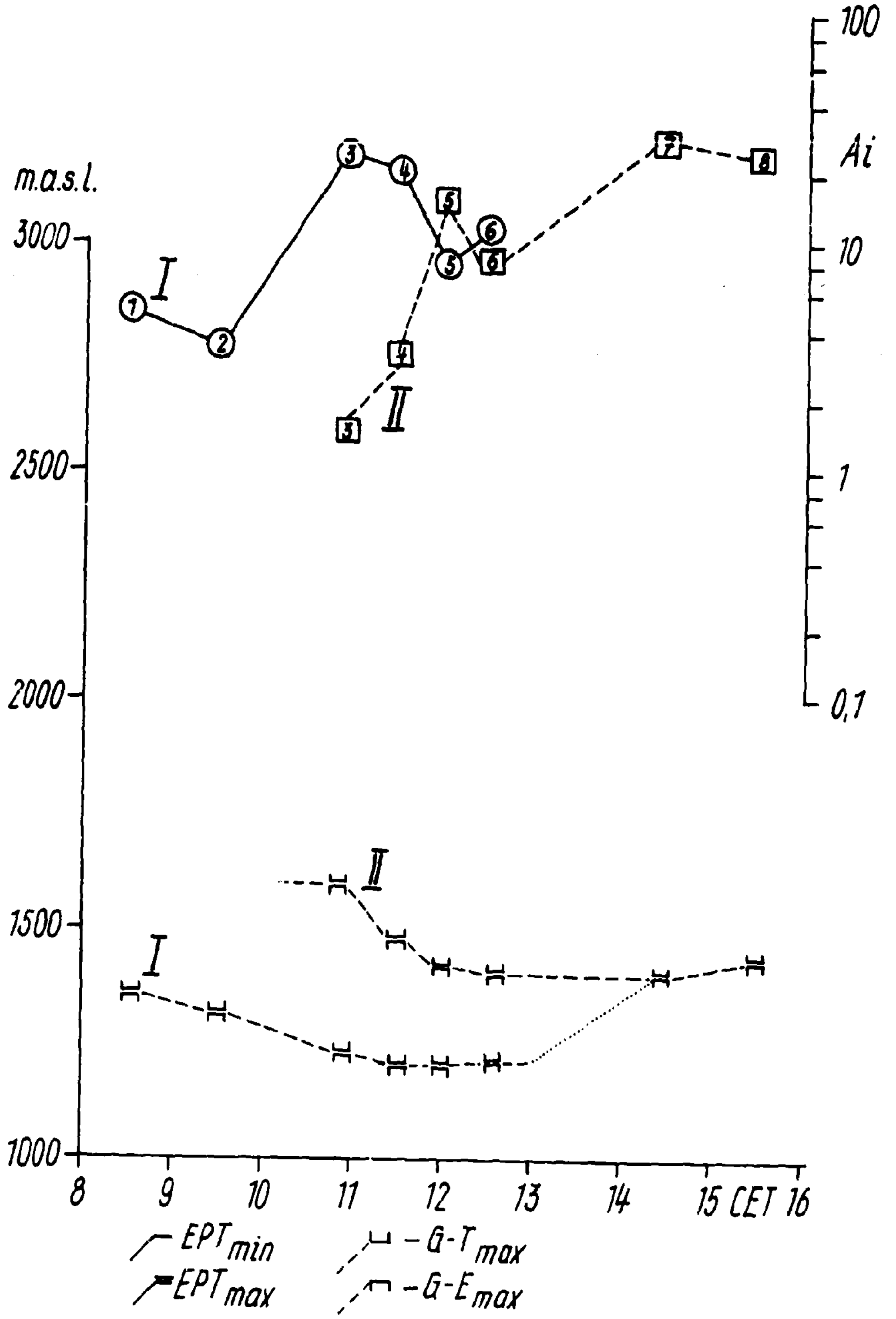
11 Dec 1970 Example D Fig. 25



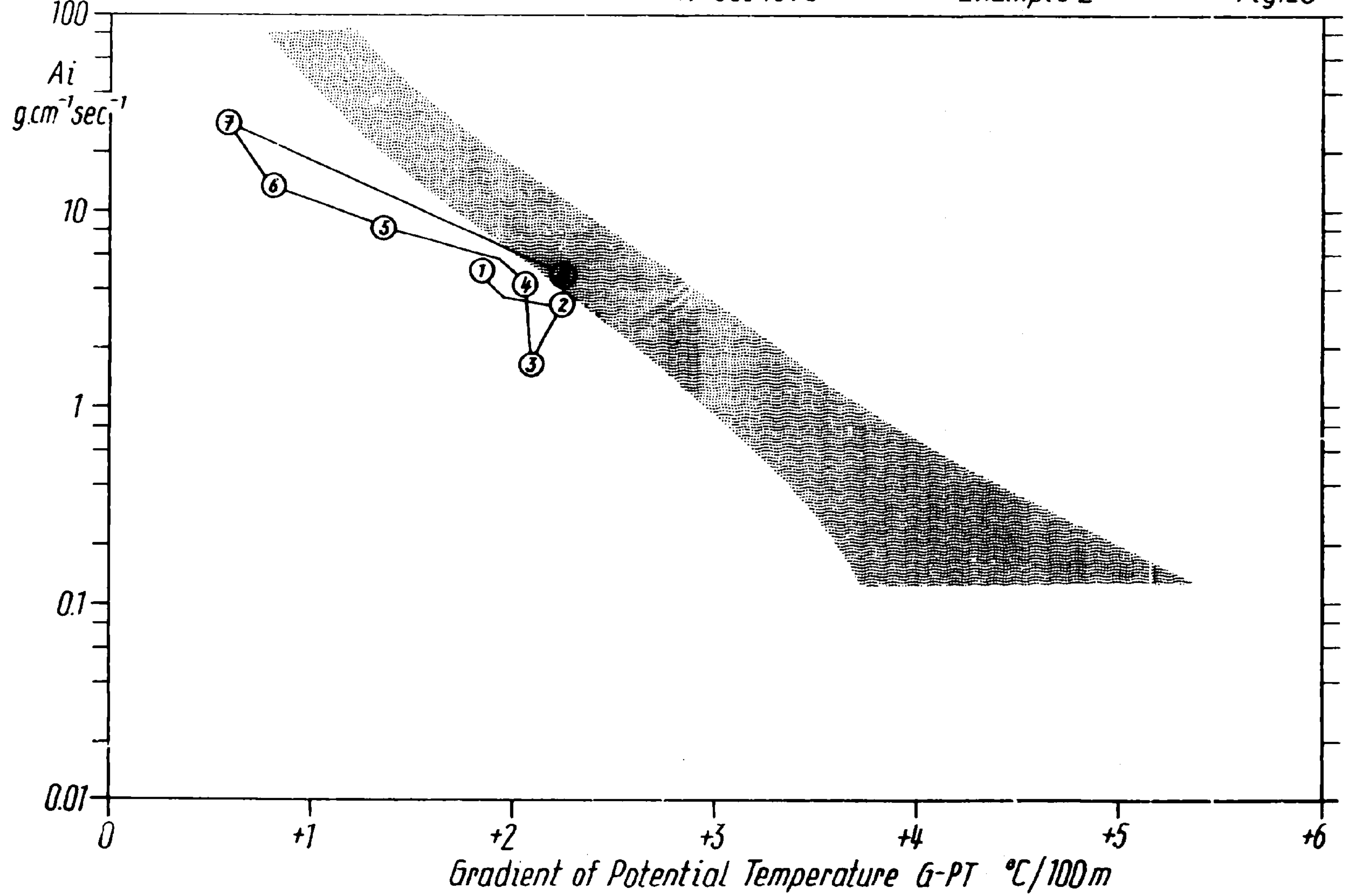
11 Dec 1970 Example D Fig. 26

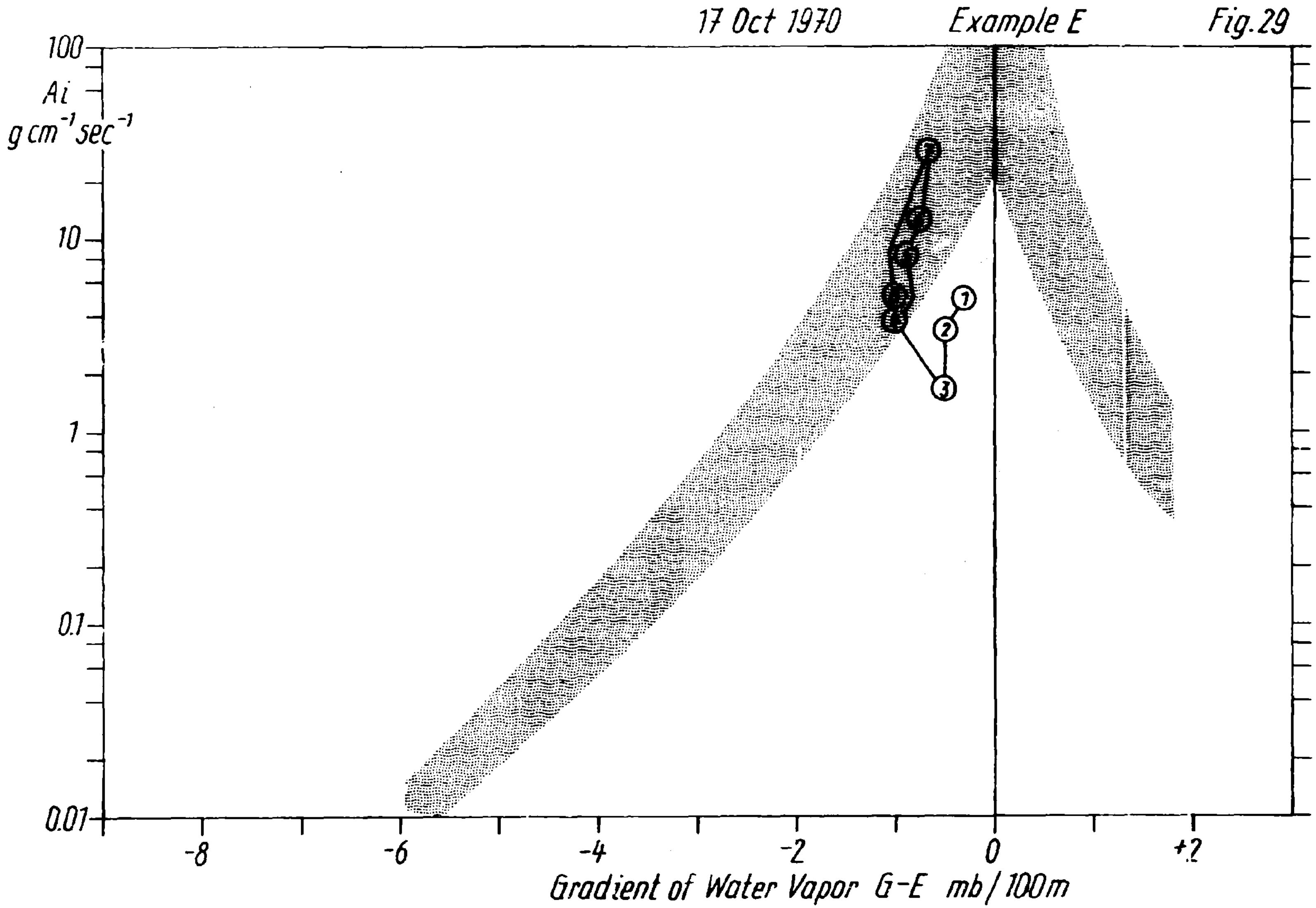


17 Oct 1970 Example E Fig. 27



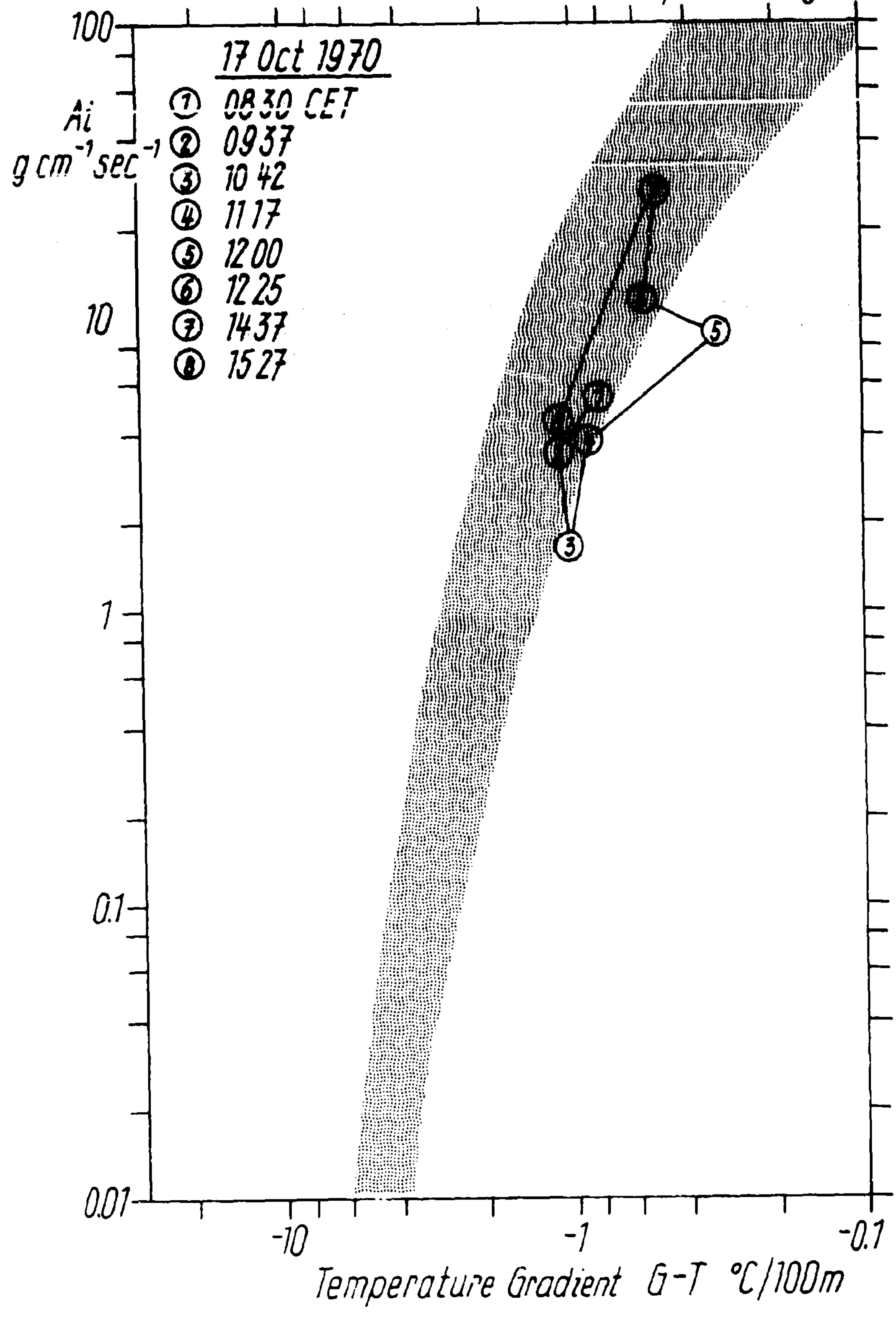
17 Oct 1970 Example E Fig. 28



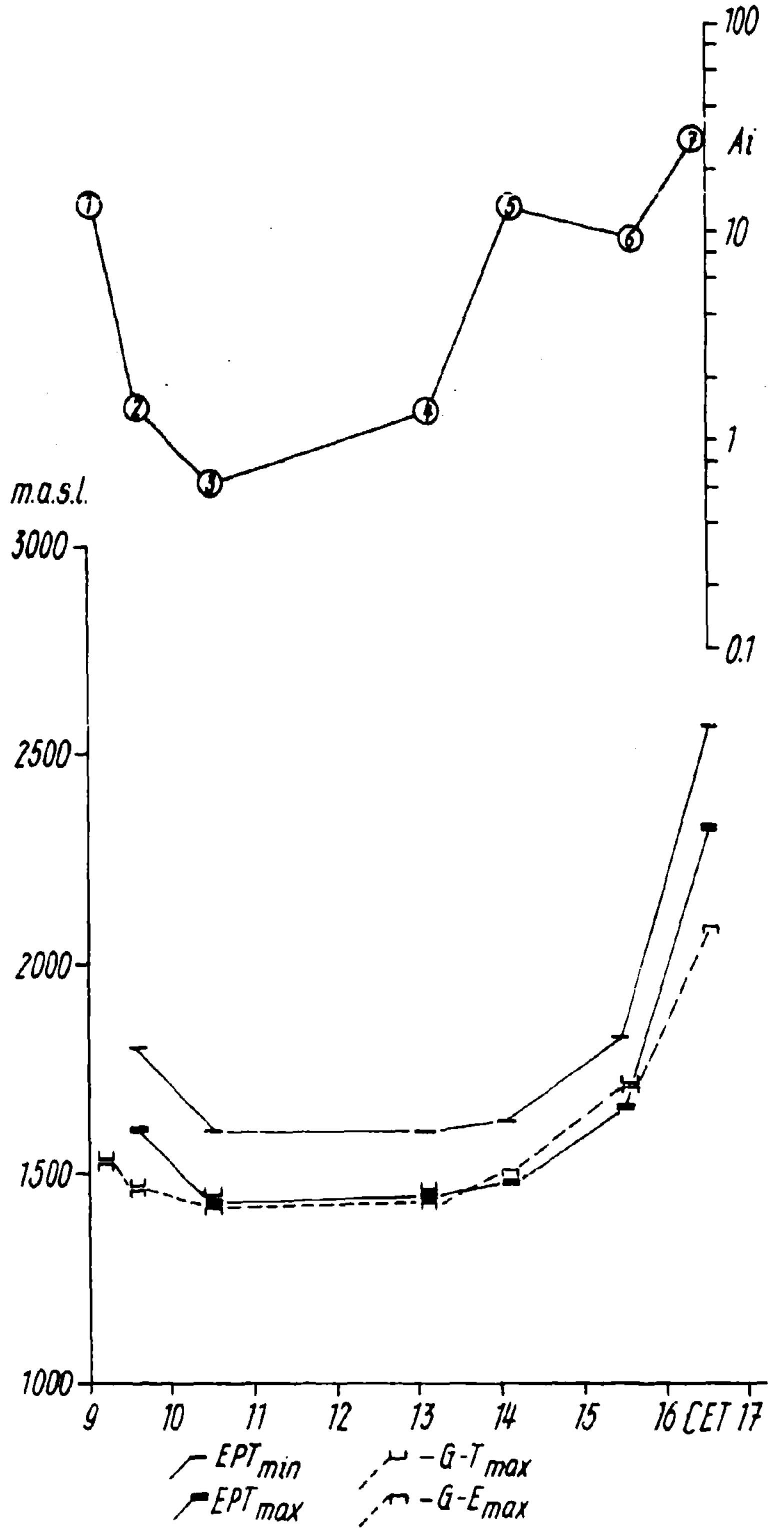


17 Oct 1970
Example E
Fig.29
100
Ai
g cm⁻¹ sec⁻¹
10
1
0.1
0.01
-8
-6
-4
-2
0
+2
1
2
3
Gradient of Water Vapor G-E mb/100m

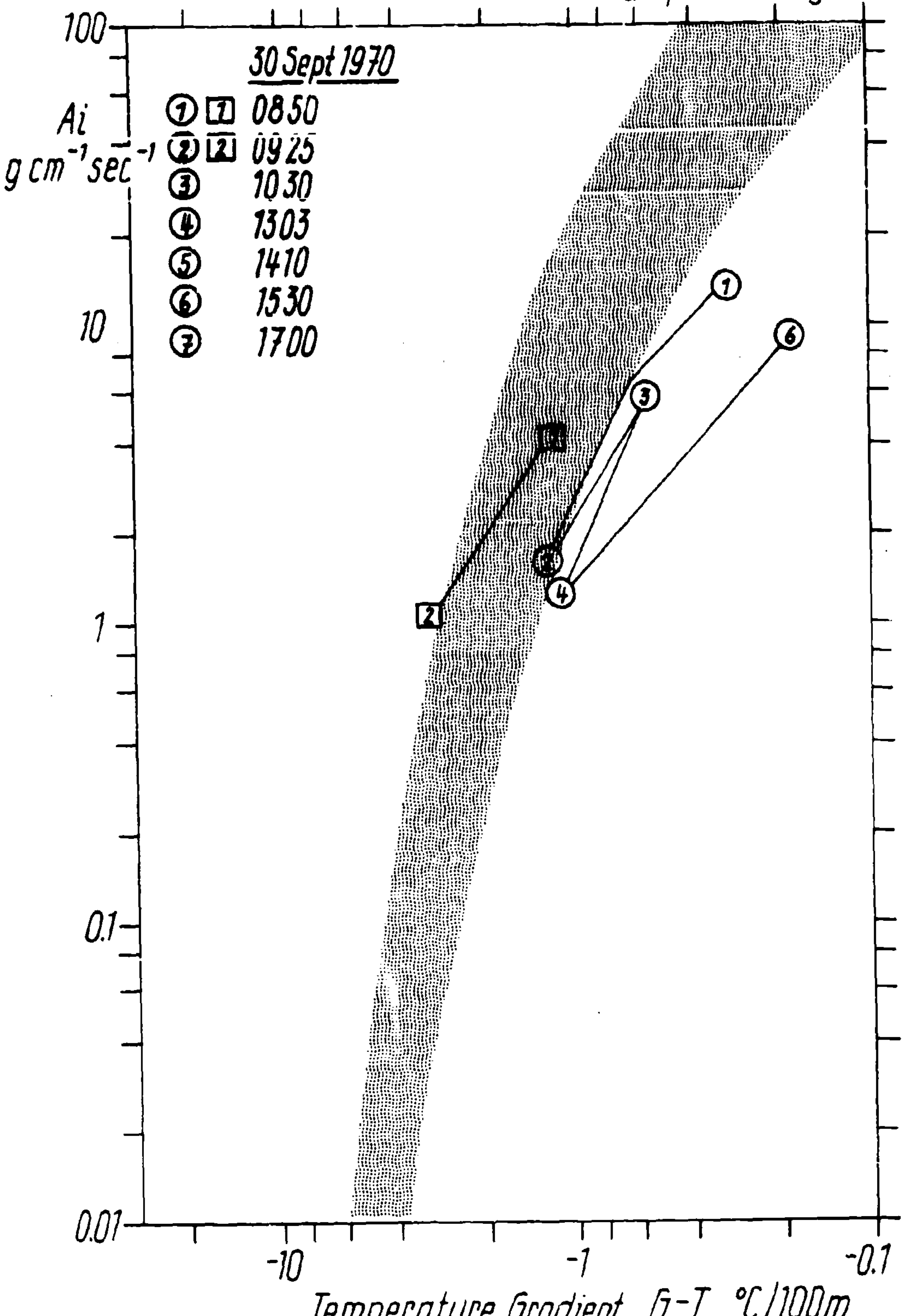
Example E Fig. 30



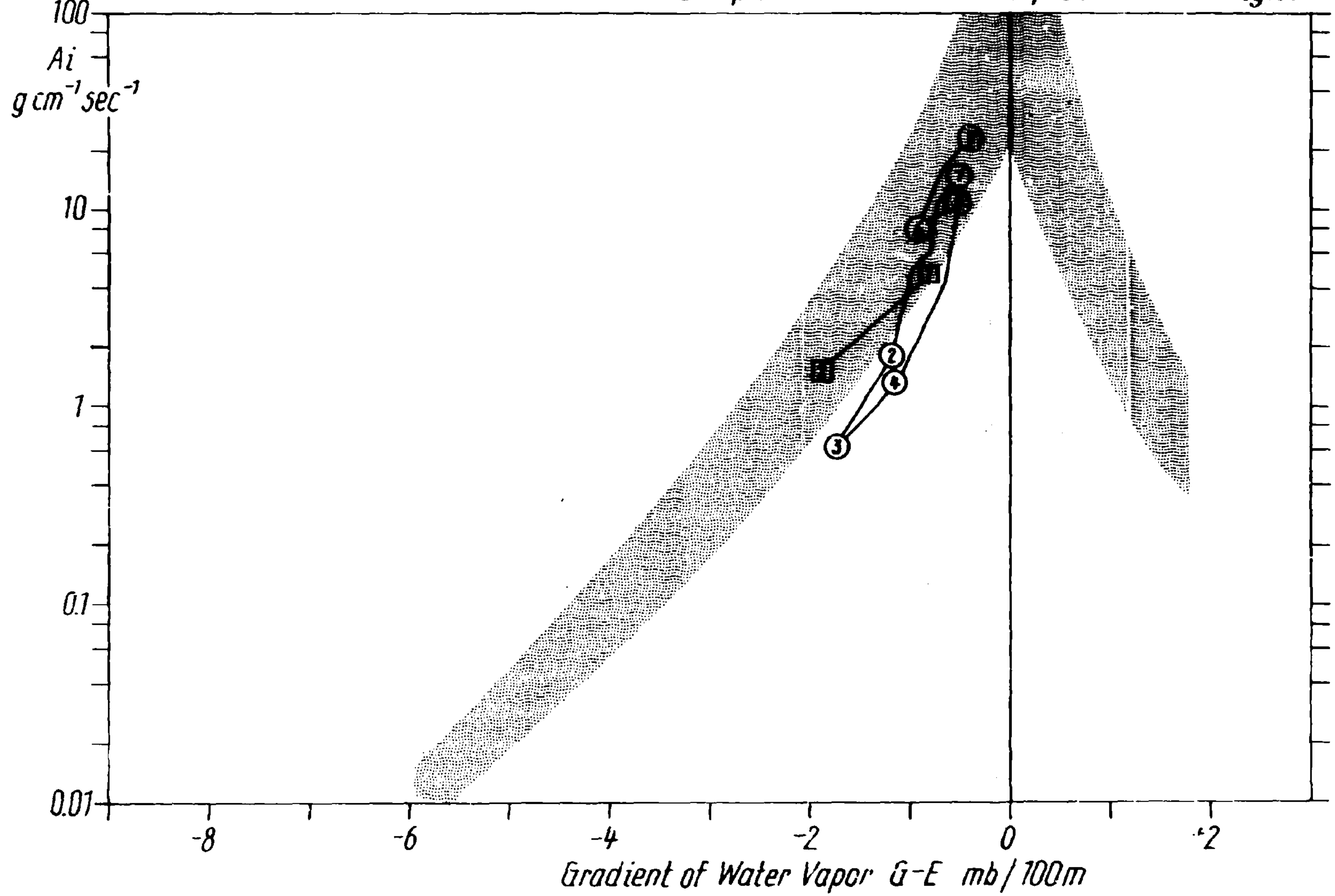
30 Sept. 1970 Example F Fig. 31



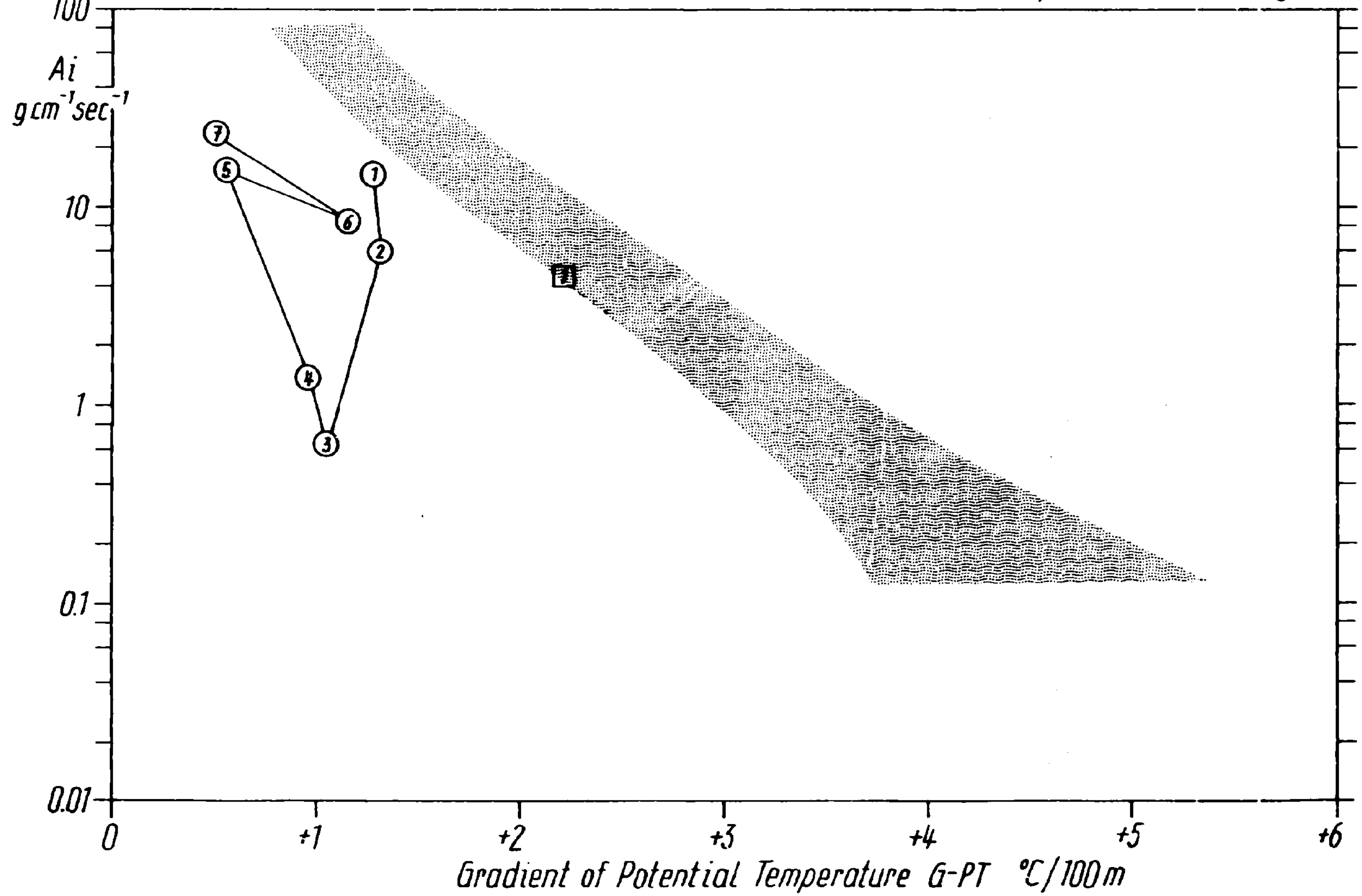
Example F Fig.32



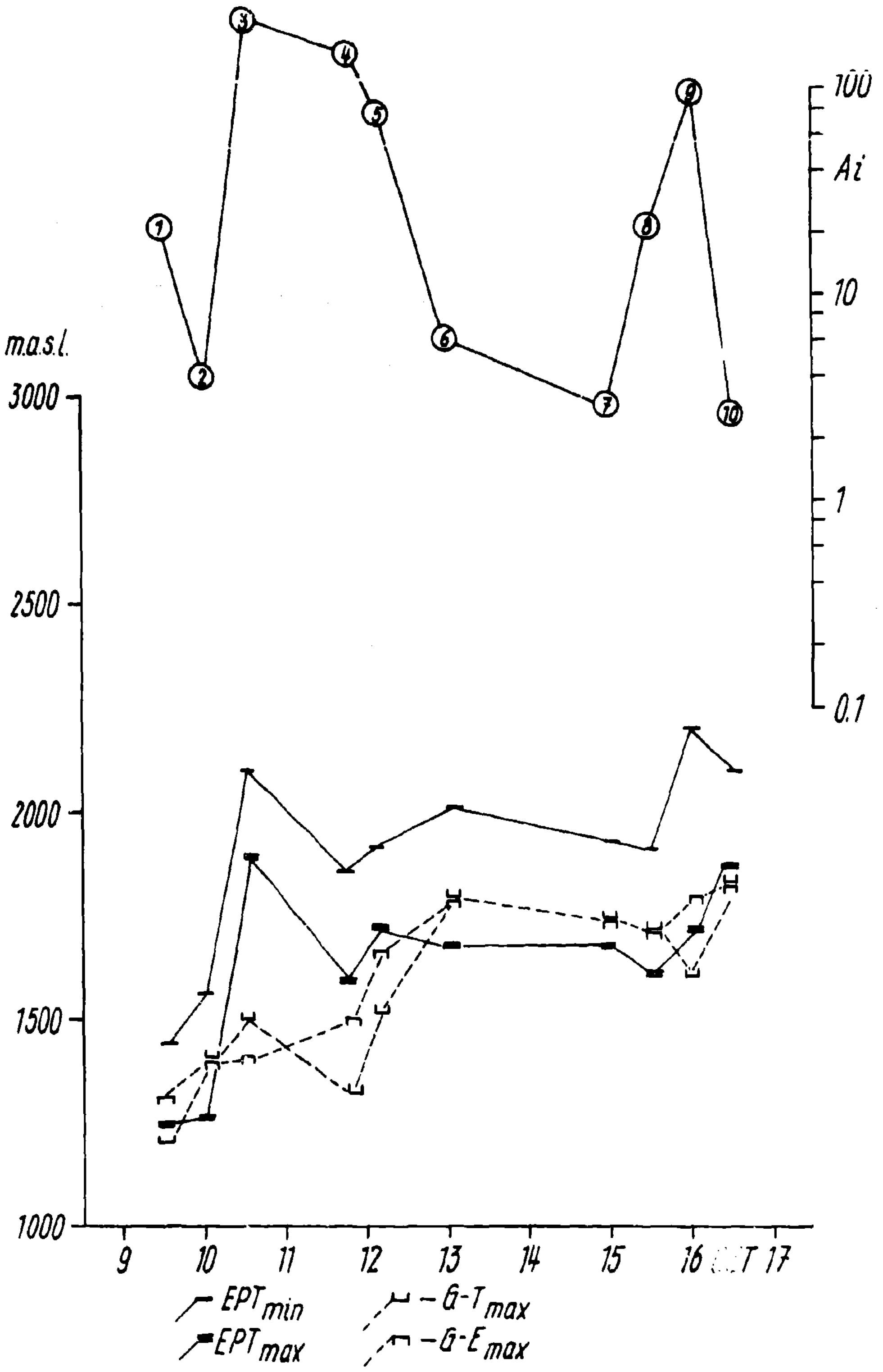
30 Sept. 1970 Example F Fig. 33

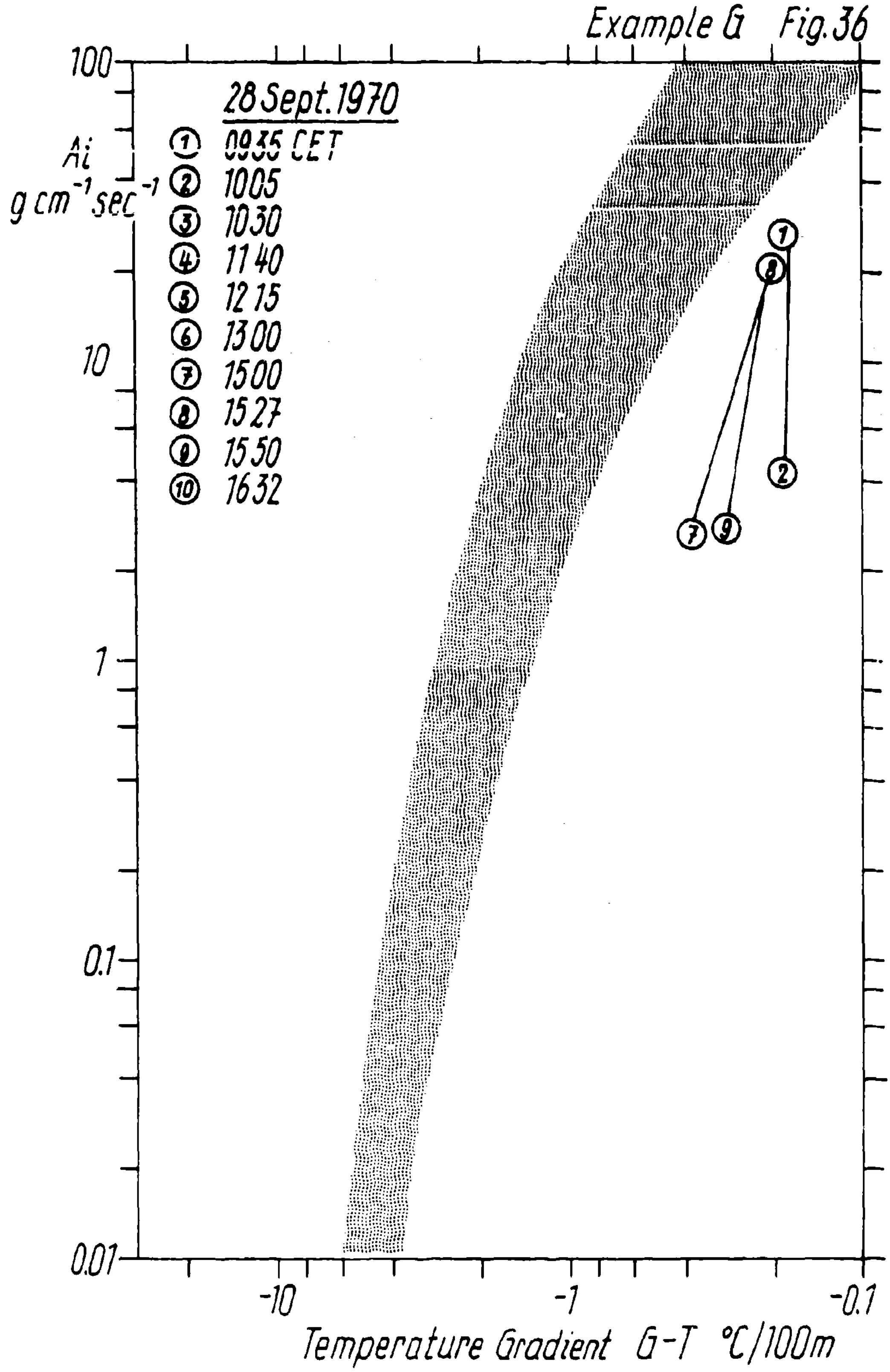


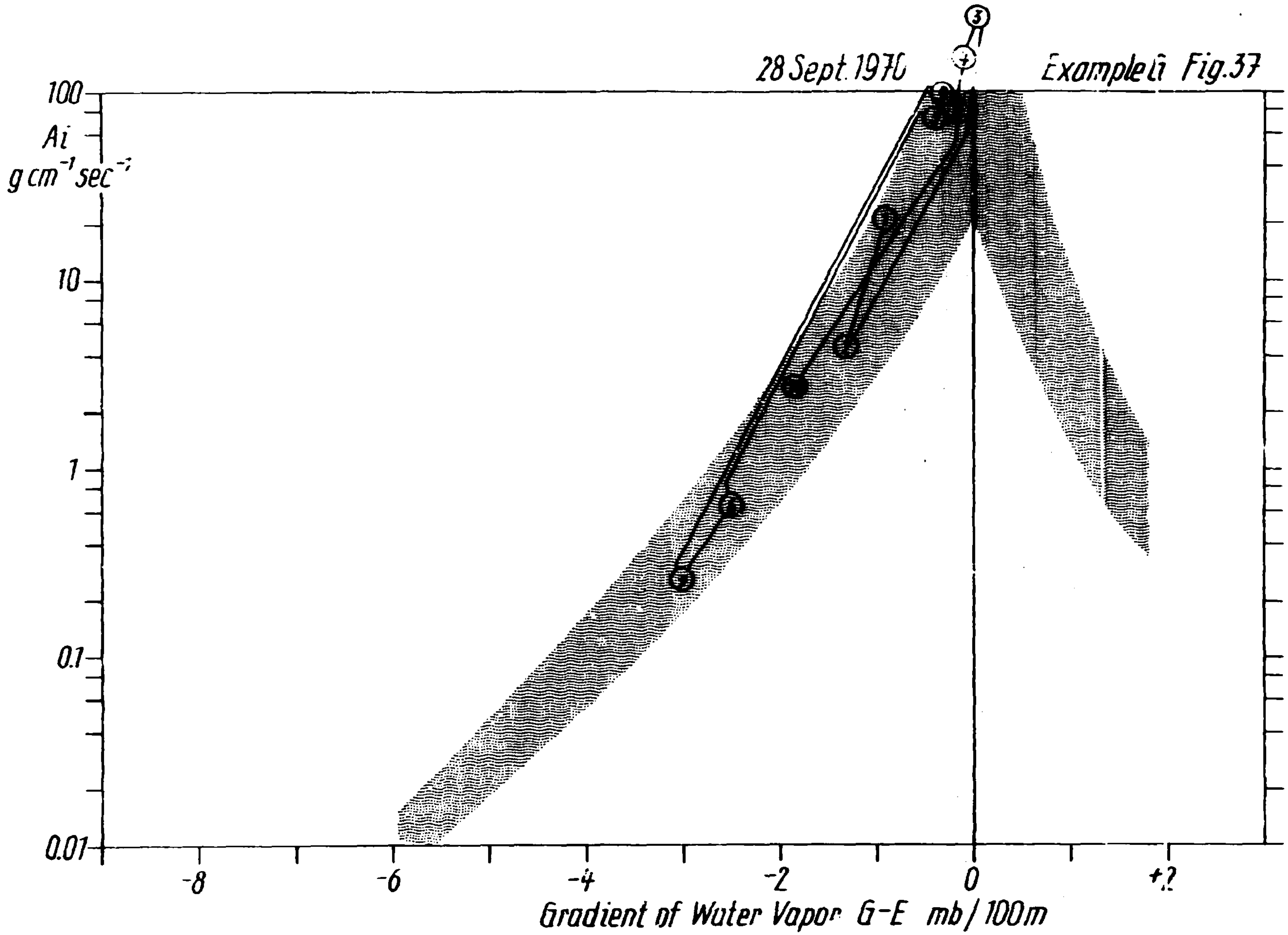
30 Sept. 1970 Example F Fig.34



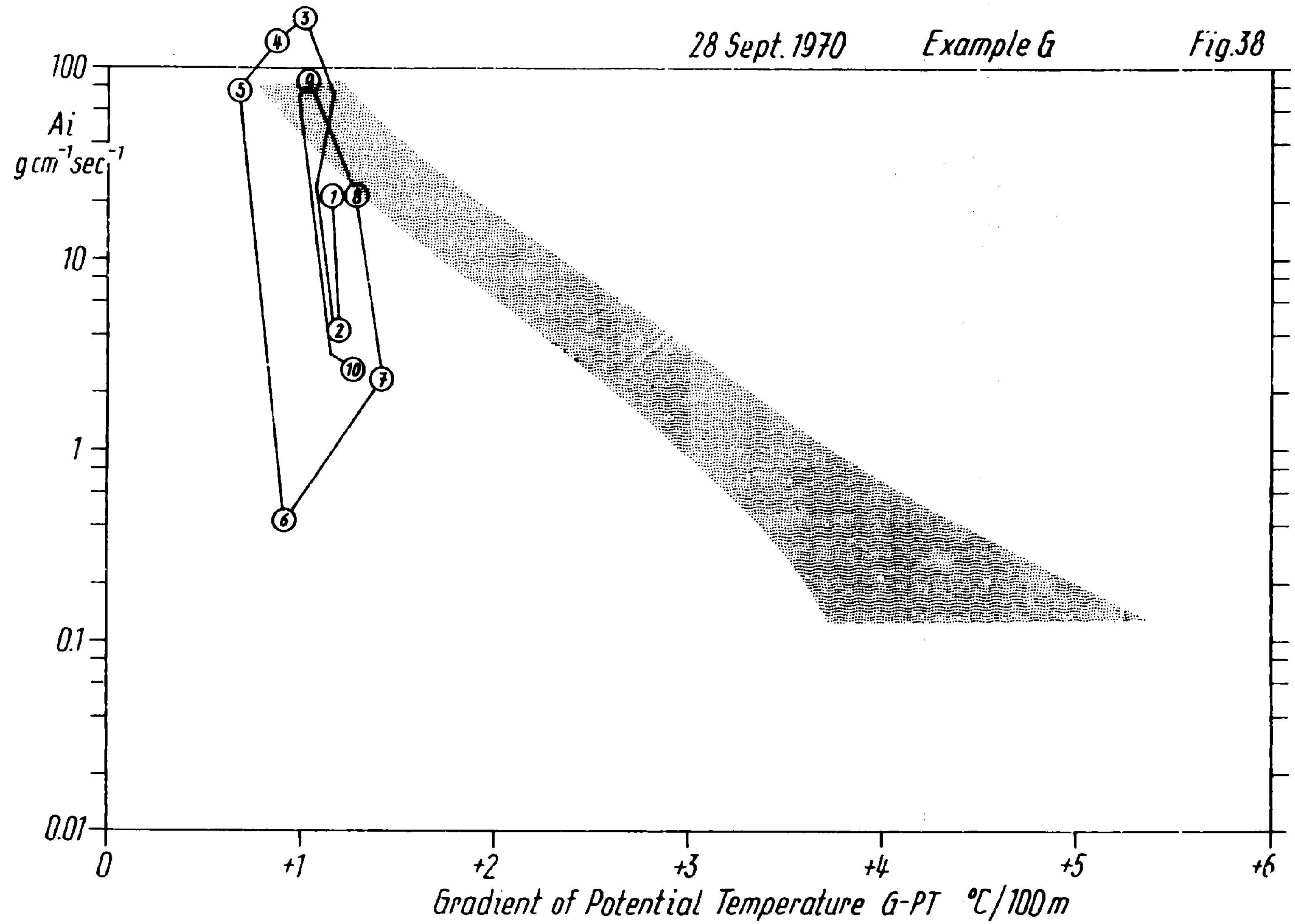
28 Sept. 1970 Example G Fig. 35



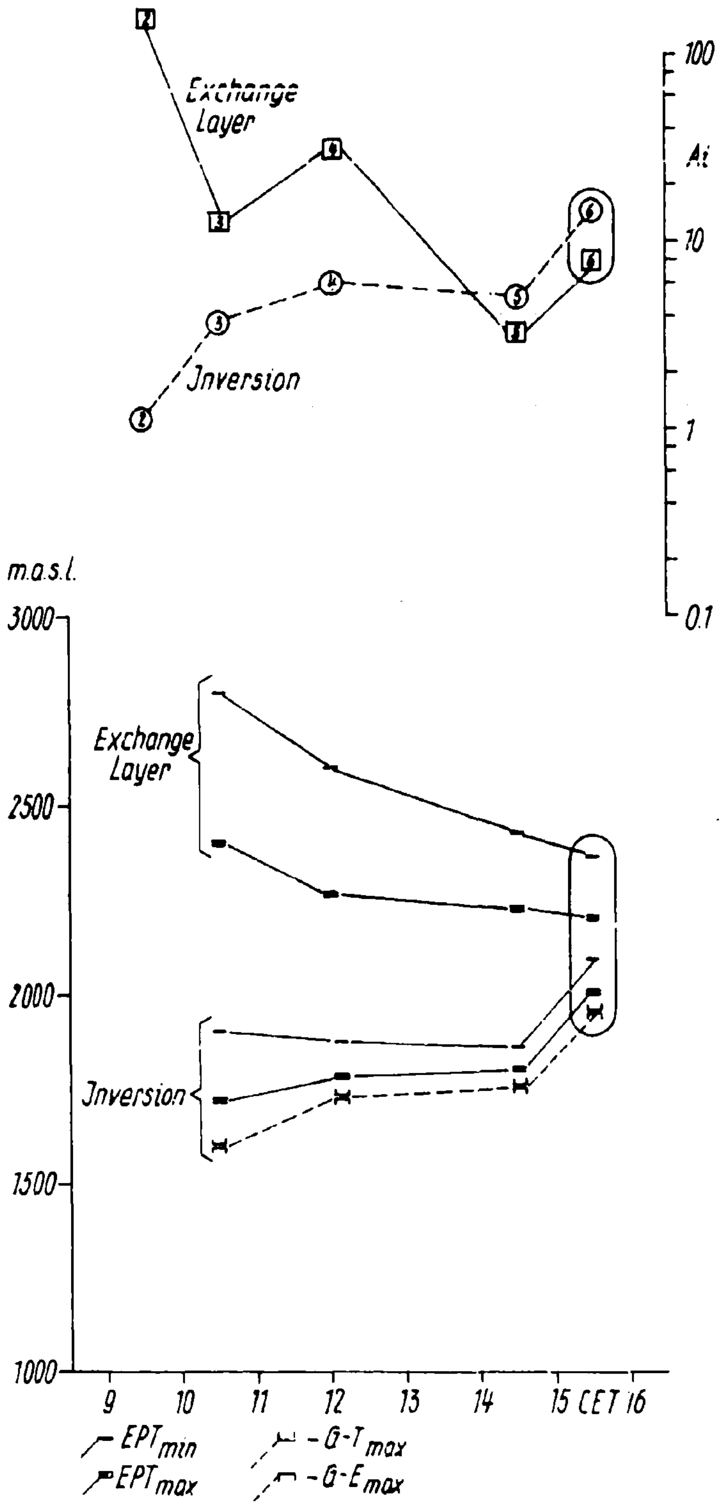

Example G Fig.36
28 Sept. 1970
① 0935 CET
② 1005
③ 1030
④ 1140
⑤ 1215
⑥ 1300
⑦ 1500
⑧ 1527
⑨ 1550
⑩ 1632
Ai
g cm⁻¹ sec⁻¹
100
10
1
0.1
0.01
-10
-1
-0.1
Temperature Gradient G-T °C/100m


28 Sept. 1970
Example ii Fig. 37
100
Ai
g cm^-1 sec^-1
10
1
0.1
0.01
-8
-6
-4
-2
0
+2
Gradient of Water Vapor G-E mb/100m

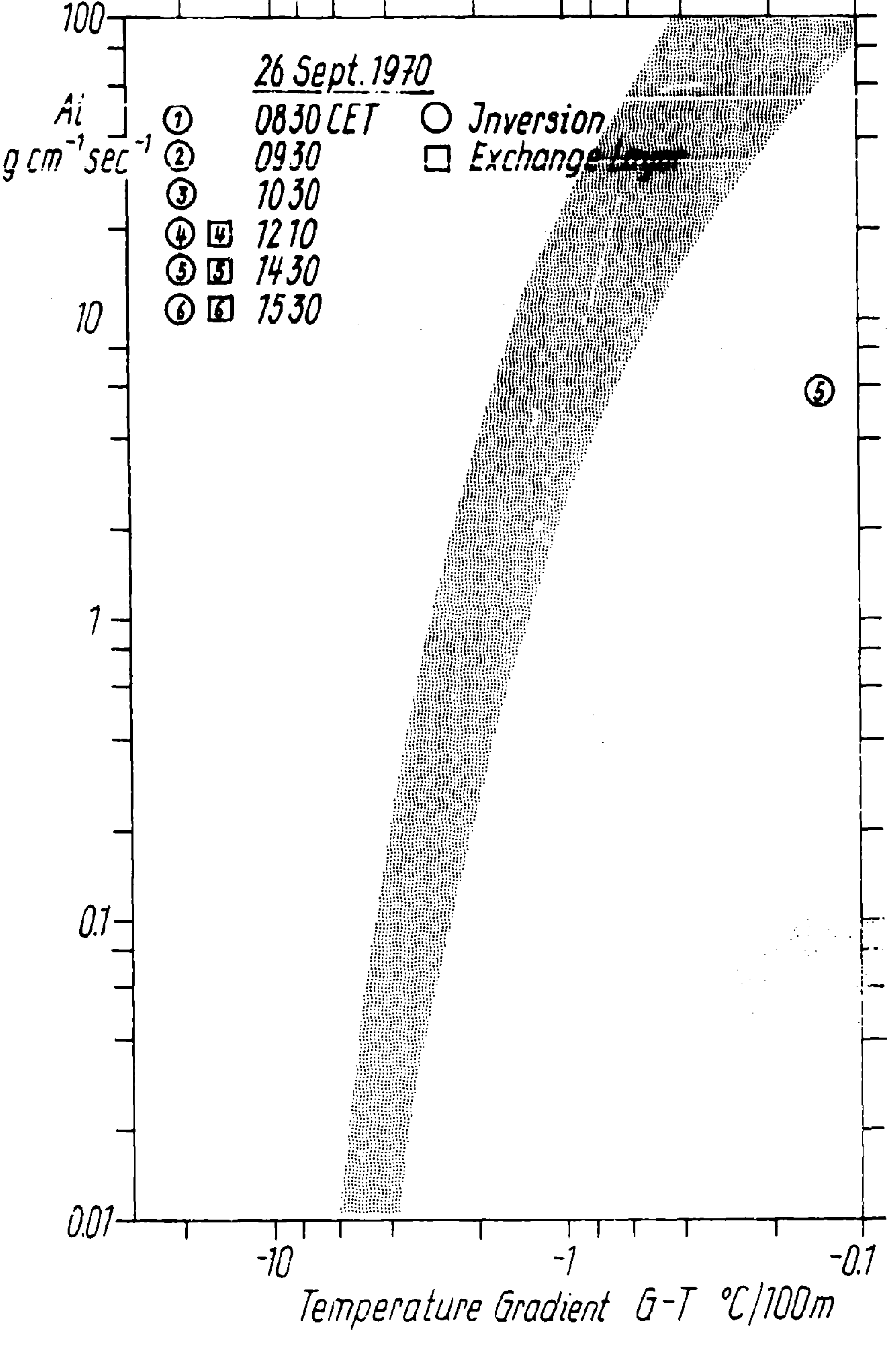
28 Sept. 1970 Example G Fig.38

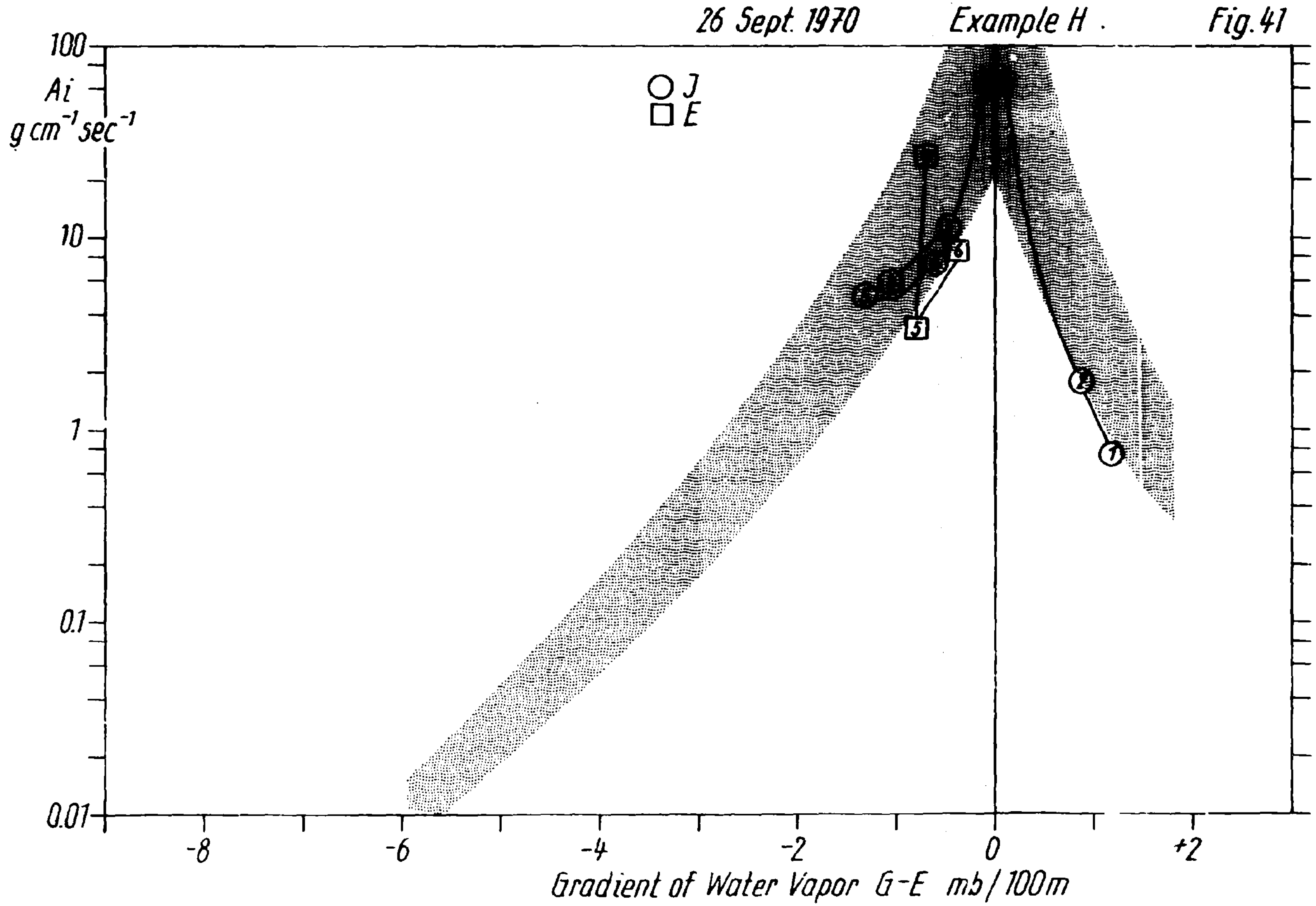


26 Sept. 1970 Example H Fig.39

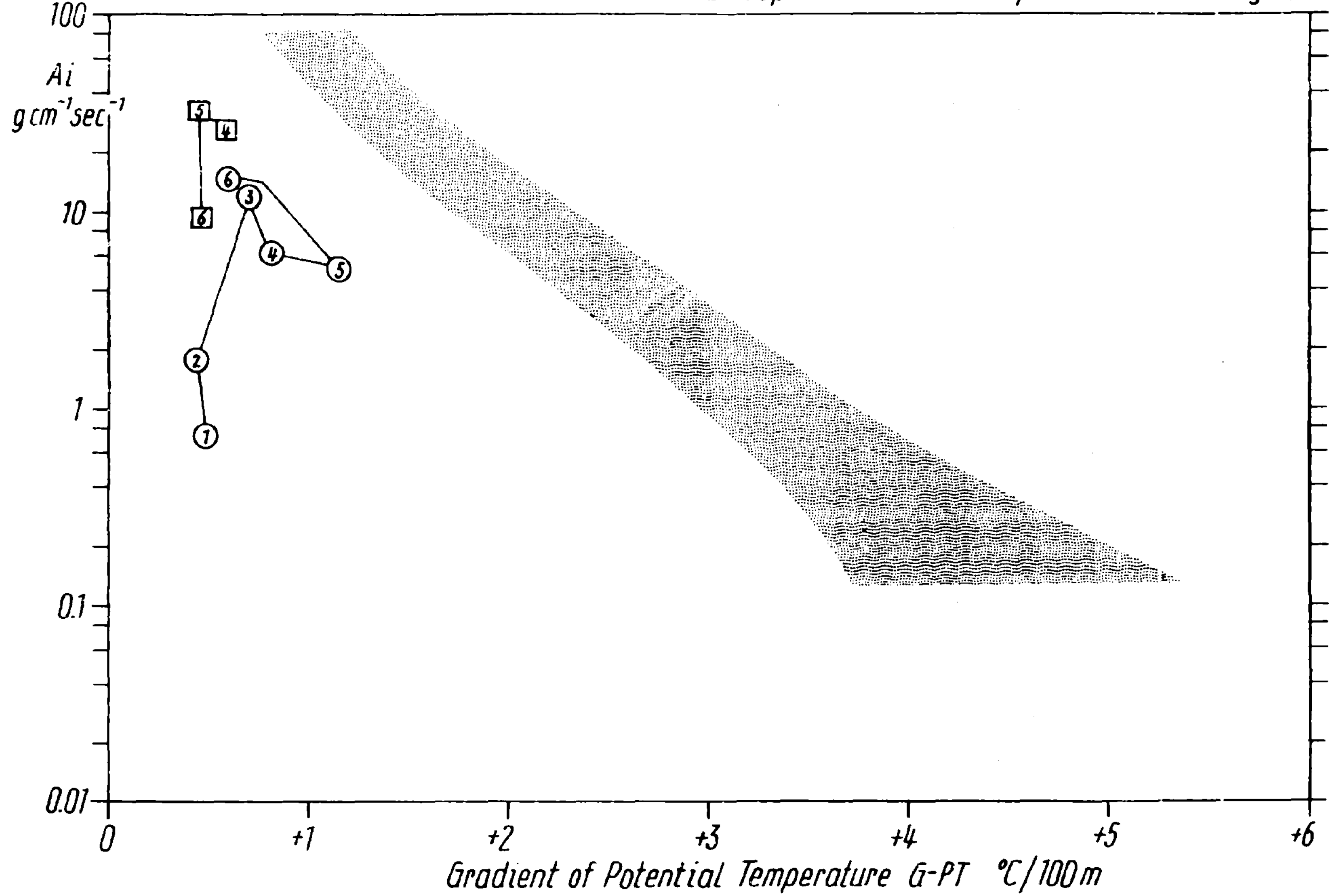


Example H Fig. 40

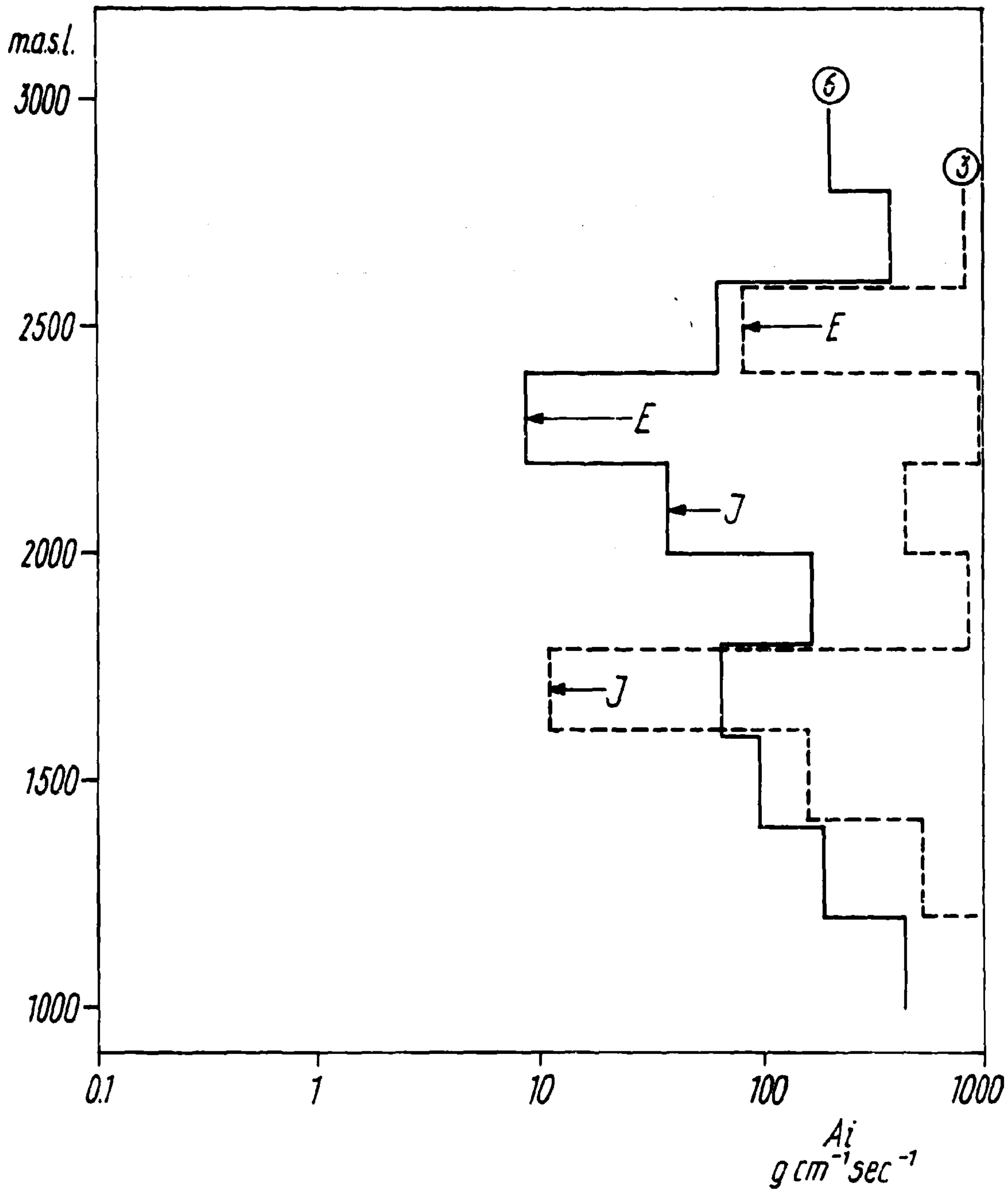


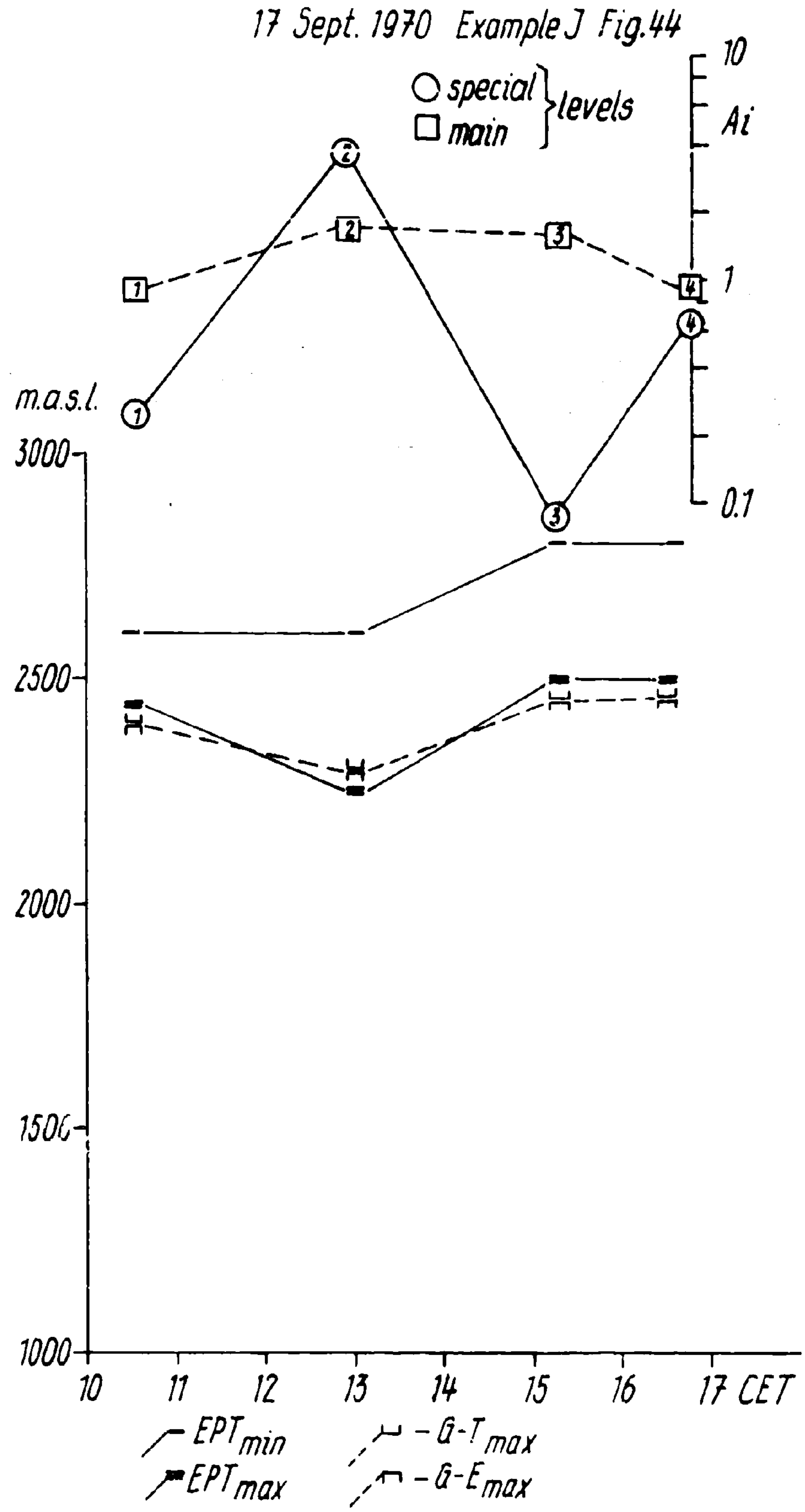

26 Sept. 1970
Example H.
Fig. 41
100
Ai
g cm⁻¹ sec⁻¹
10
1
0.1
0.01
J
E
5
6
2
1
-8
-6
-4
-2
0
+2
Gradient of Water Vapor G-E mb/100m

26 Sept. 1970 Example H Fig. 42



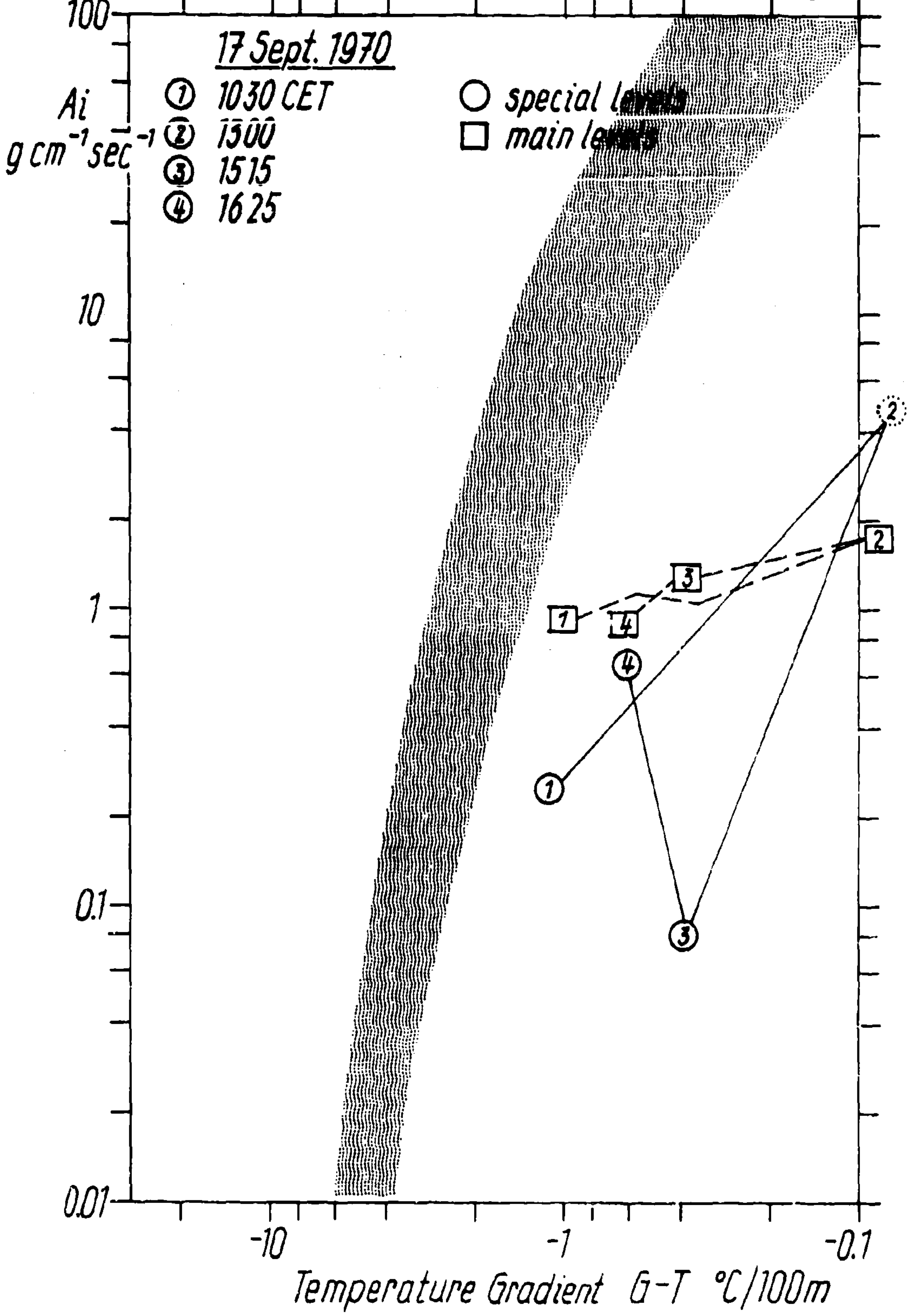
26 Sept. 1970   Example H Fig. 43



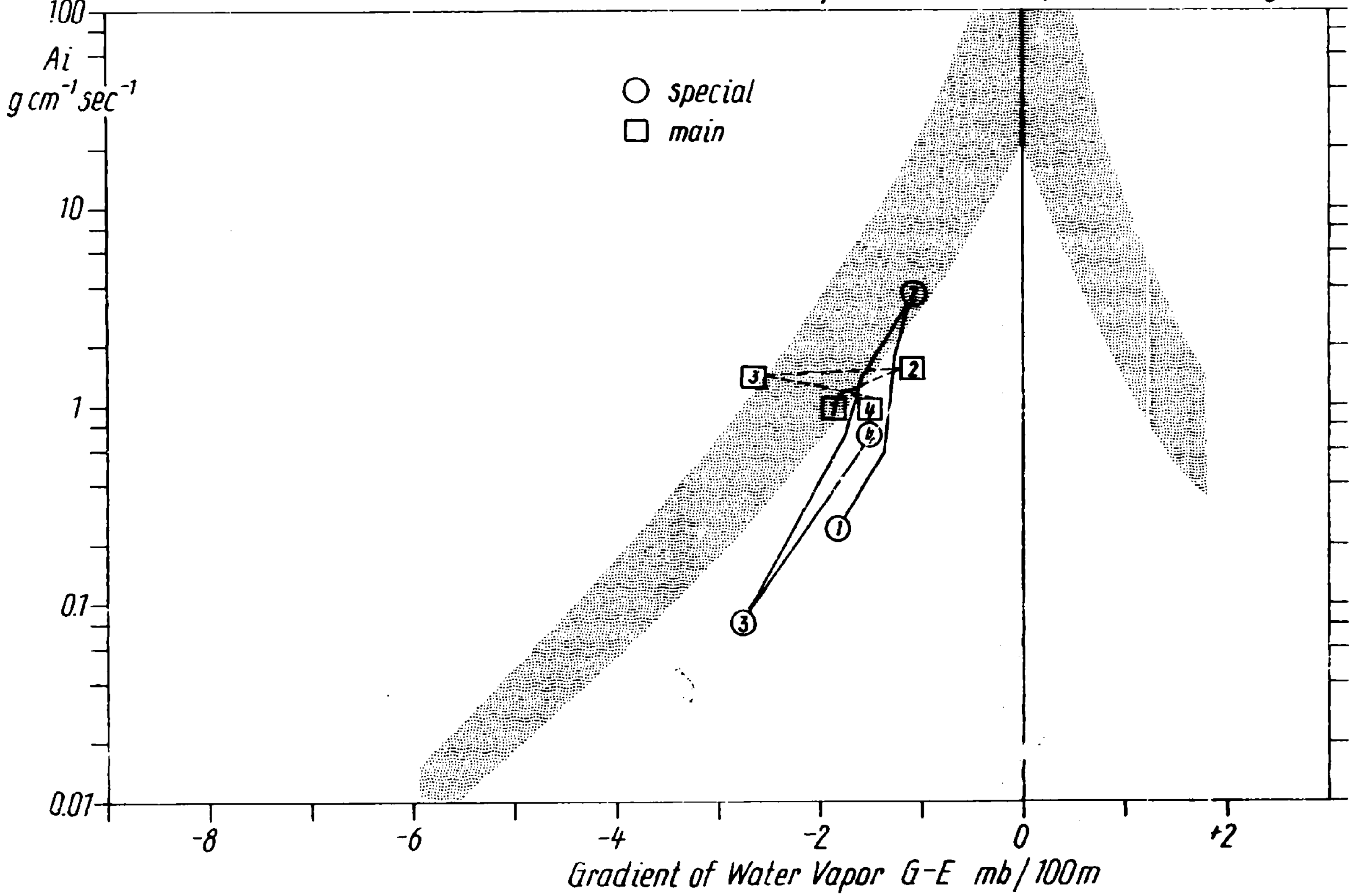


17 Sept. 1970 Example J Fig.44
special
main
levels
10
Ai
1
0.1
m.a.s.l.
3000
2500
2000
1500
1000
10
11
12
13
14
15
16
17 CET
EPTmin
EPTmax
- G-Tmax
- G-Emax

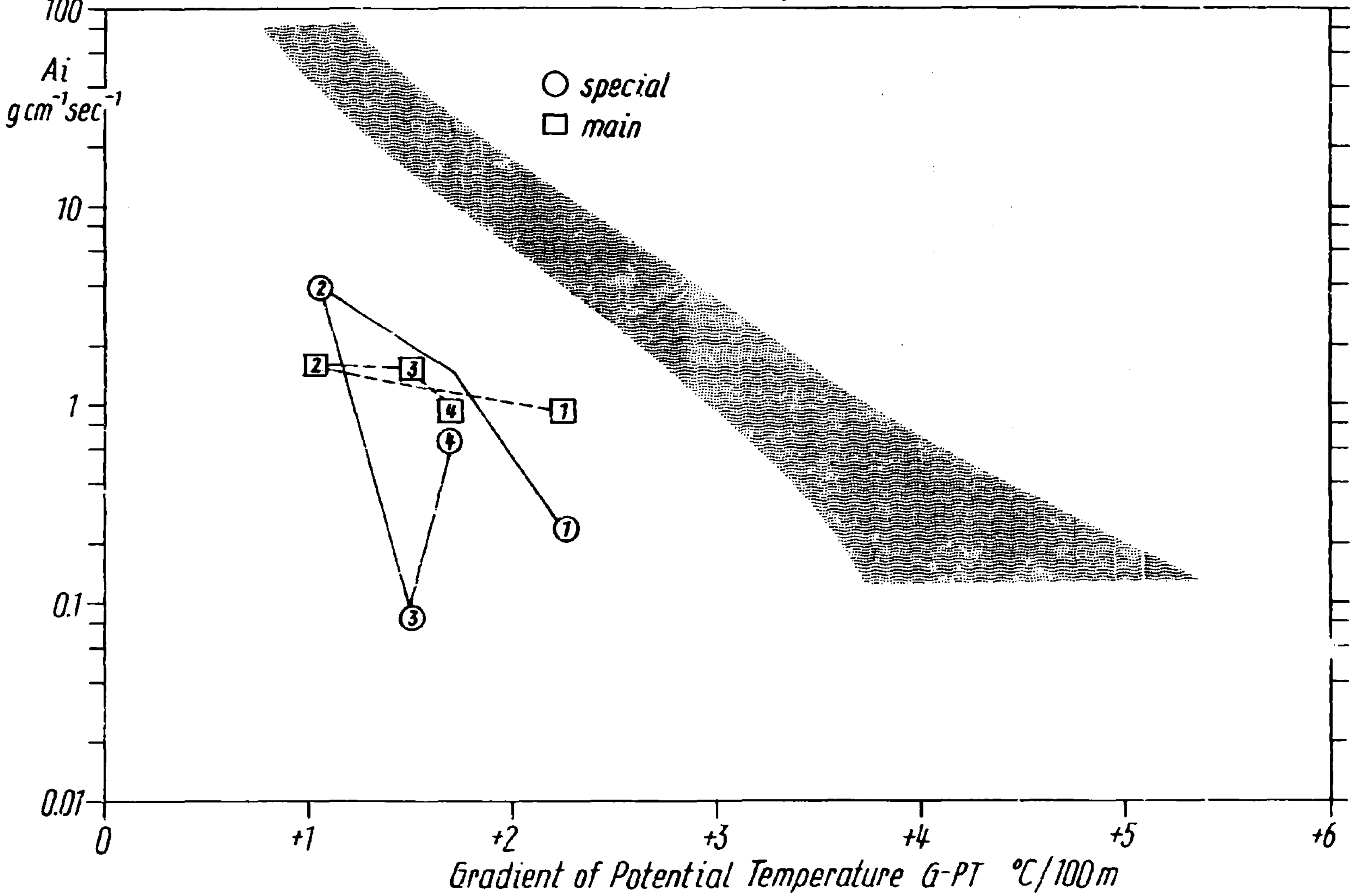
Example J Fig. 45



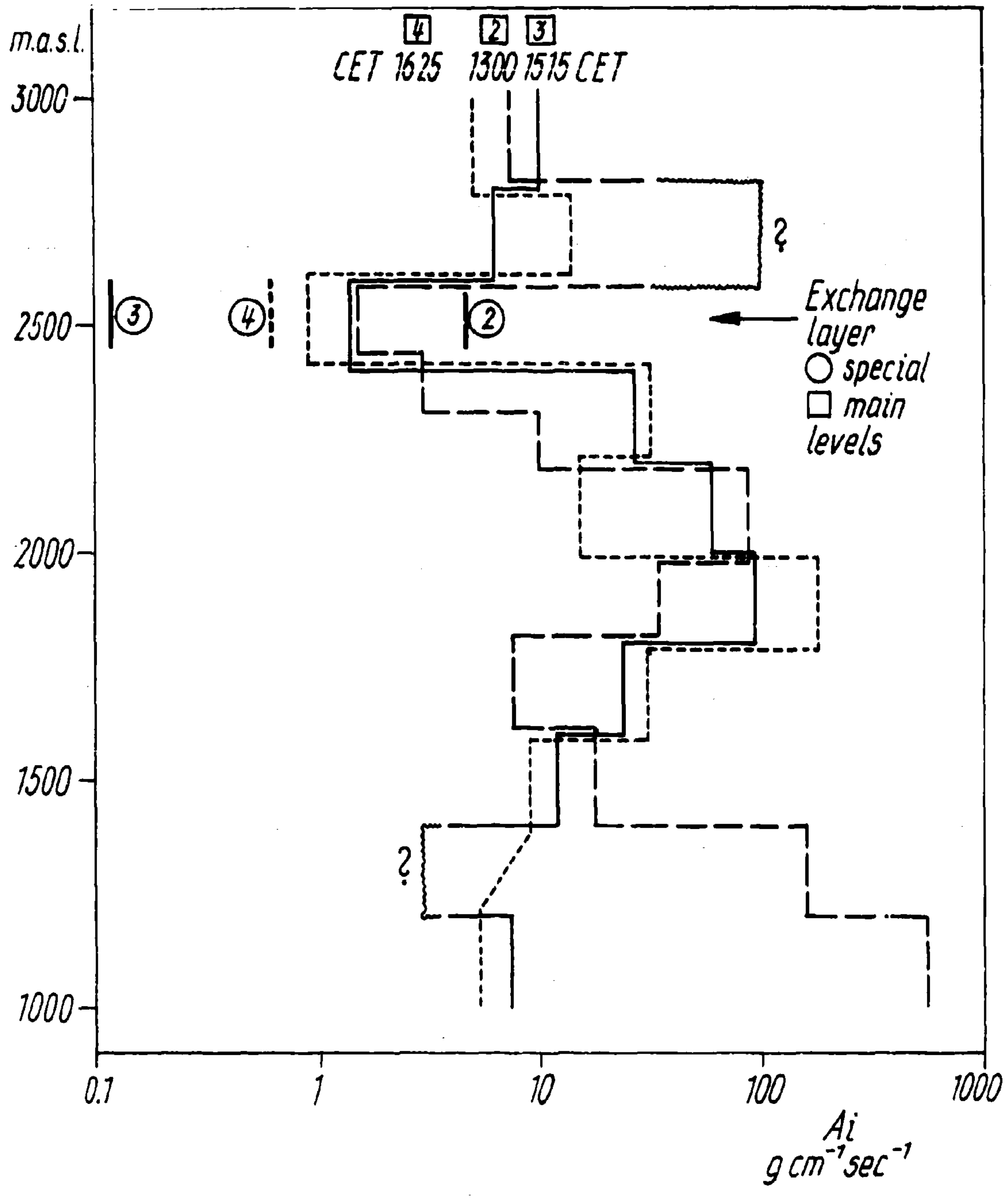
17 Sept. 1970 Example J Fig. 46



17 Sept. 1970 Example J Fig. 47



Example J Fig. 48



2. Legends to the Figures 1 - 48

Legends to Figures

Fig. 1:
Chart on the processing of the recordings transmitted from the moving cable car, up to the final results: the completed tables printed out by teletype.

Fig. 2:
Relation between incremental exchange coefficient A_i and temperature gradient G-T. Representation of the relation by the individual pairs of values. The relation applies to real inversions exclusively (stationary equilibrium of the eddy diffusion).

Fig. 3:
Result of statistical analyses of Fig. 2 with indication of scatter (red).

Fig. 4:
Relation between incremental exchange coefficient A_i and gradient of potential temperature G-PT expressed in degrees centigrade per 100 m. Representation of the individual pairs of values. Valid for real inversions (stationary equilibrium of eddy diffusion).

Fig. 5:
Same as Fig. 4, however, result of statistical investigation with indication of scatter (red).

Fig. 6:
Relation between incremental exchange coefficient A_i and gradient of water vapor pressure G-E in mb/100m. Individual pairs of values. Valid for aerological structures having a G-T minimum with stationary equilibrium.

Fig. 7:
Same as Fig. 6, however, result of statistical investigation with indication of scatter (red).

Fig. 8 and 9:
Relation between incremental exchange coefficient A_i and gradient of potential temperature G-PT, divided into two intervals of time. Result of statistical investigation with indication of scatter. Relation of general applicability.

Fig. 10:
Mutual comparison of results from both intervals of time.

Re - Example A

Fig. 11:
Variations in space and time of important structural elements of the inversion newly formed at 1200 CET.

Fig. 12:
Time slope within the range of function A_i=f (G-T).
Numerals 1 through 4 identify the runs.

Fig. 13:
Same as Fig. 12, but relation A_i=f (G-PT).

Fig. 14:
Same as Fig. 12, but function A_i=f (G-E).

The following figures to Examples B trough H basically correspond to the figures of example A; hence separate legends are not needed.

Fig. 19:
Vertical profiles of the incremental exchange coefficients

A_i and water vapor pressure E for runs 2 through 7.

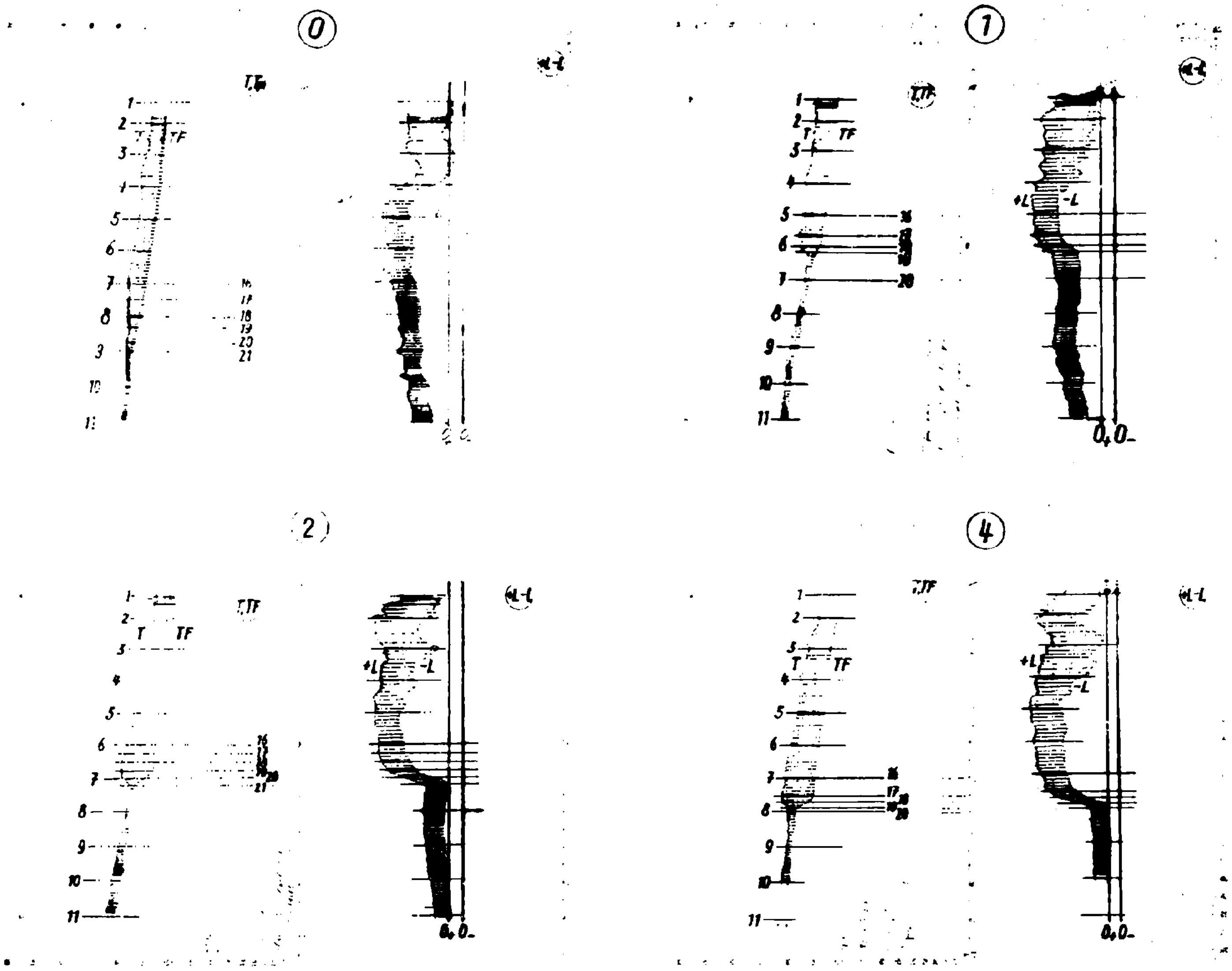
Fig. 43:
Vertical profiles of the incremental exchange coefficients A_i, recorded during runs 3 and 6.
E: upper boundary of the exchange layer
I: level of inversion.

Fig. 48:
Vertical profile of the incremental exchange coefficients A_i for runs 2, 3 and 4.

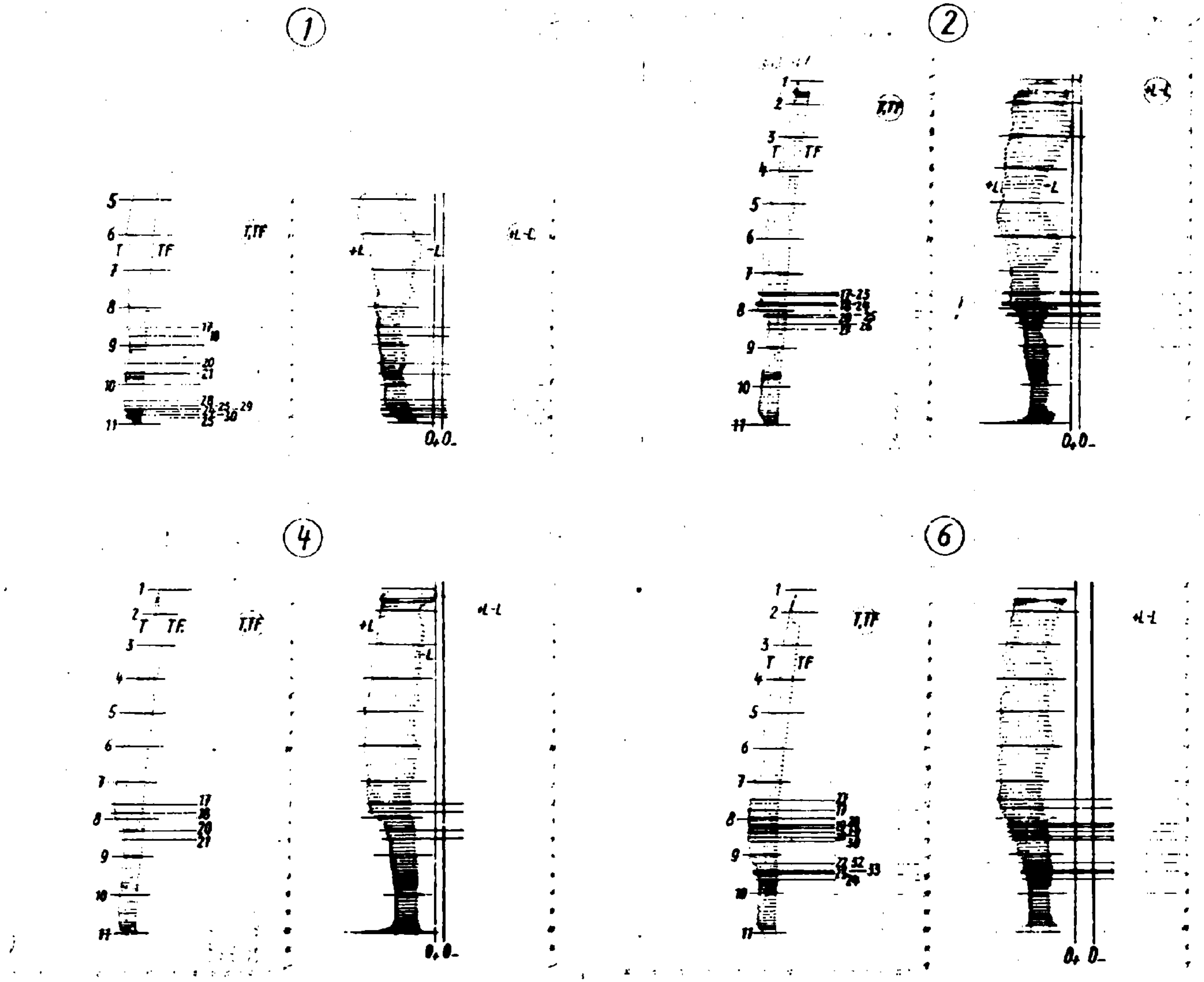
3. Individual Runs and Data Tables

Examples A - J

Example
A
5 Oct. 1970



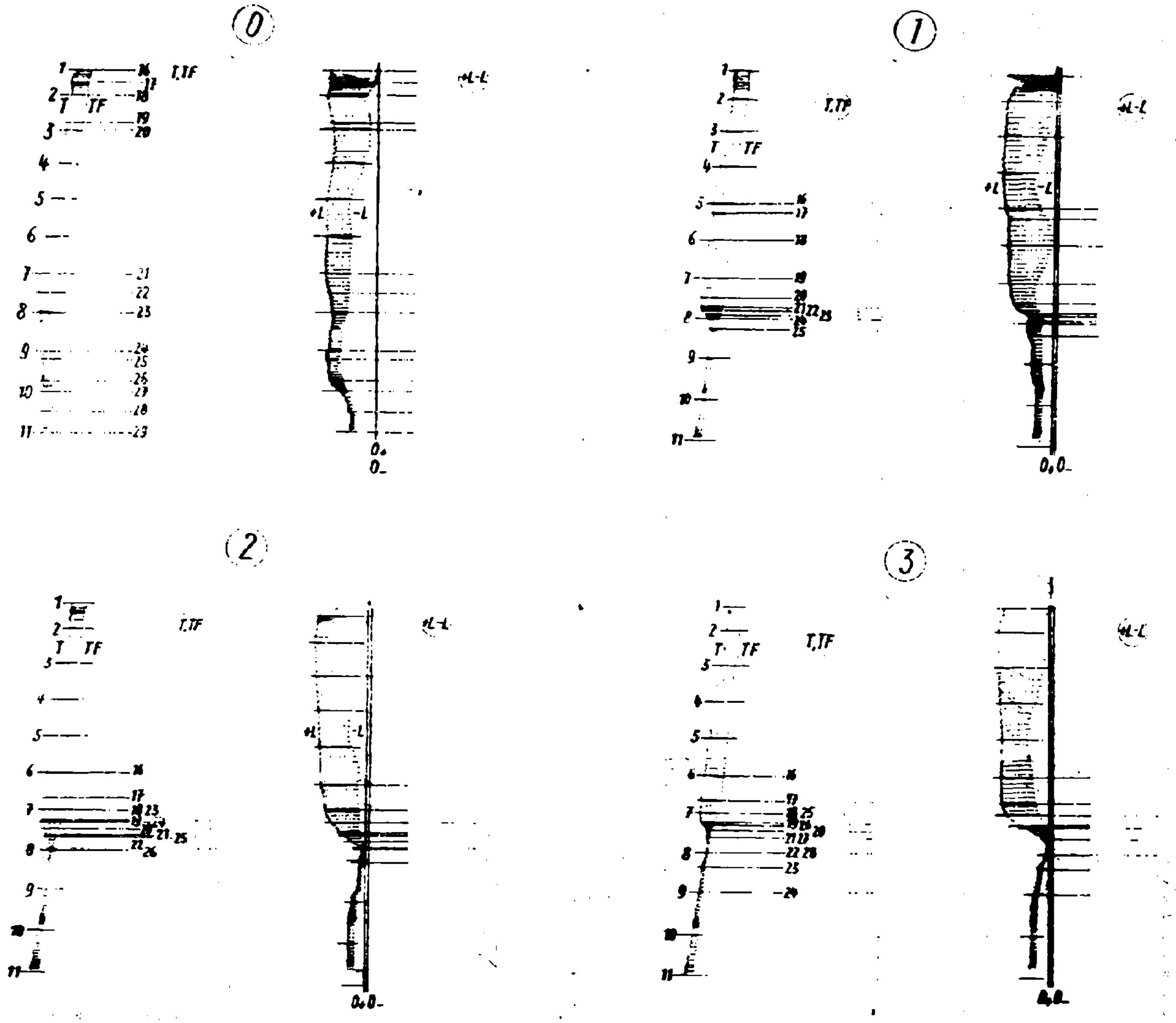
Example
B
13 Nov. 1970



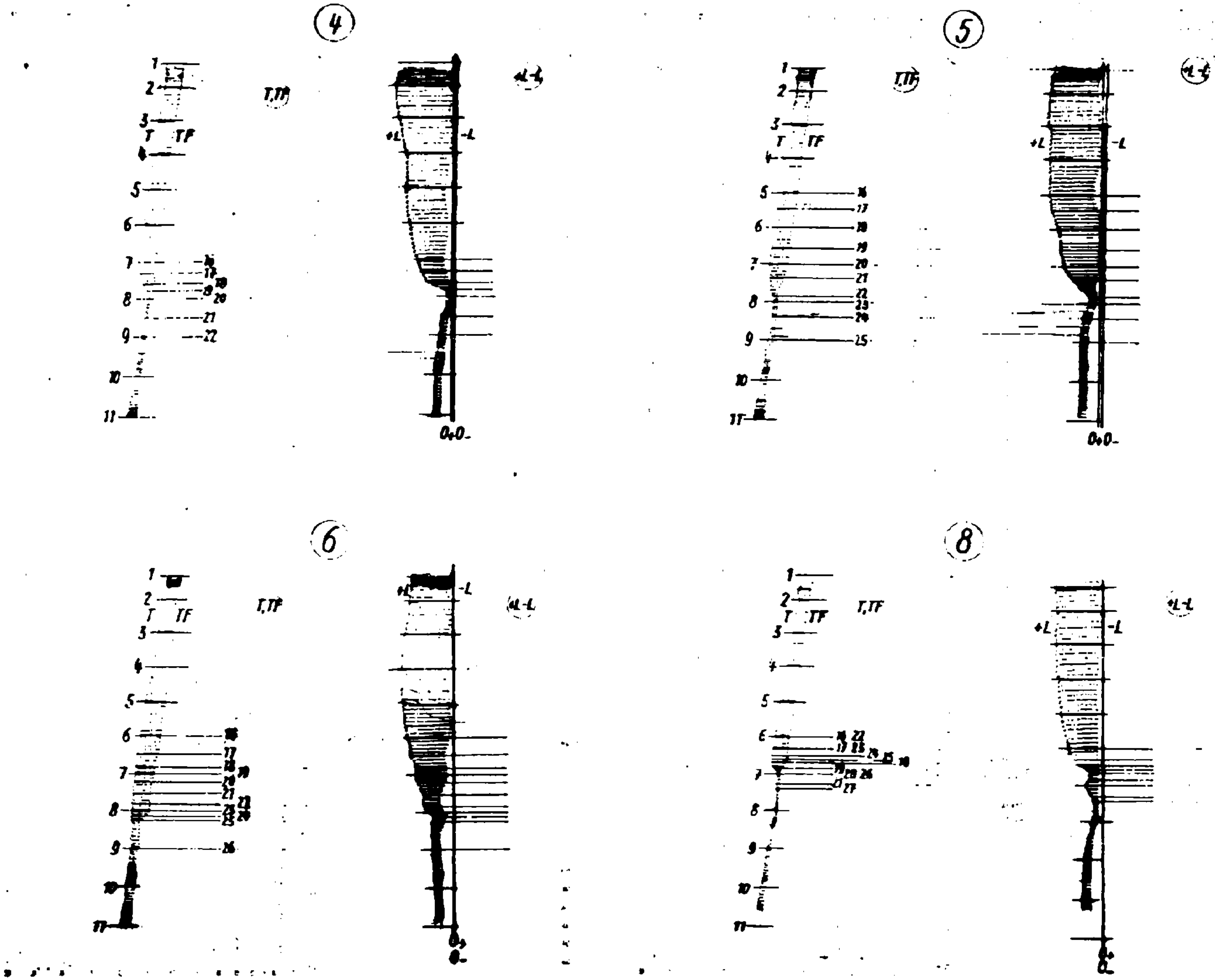
Example

C_1

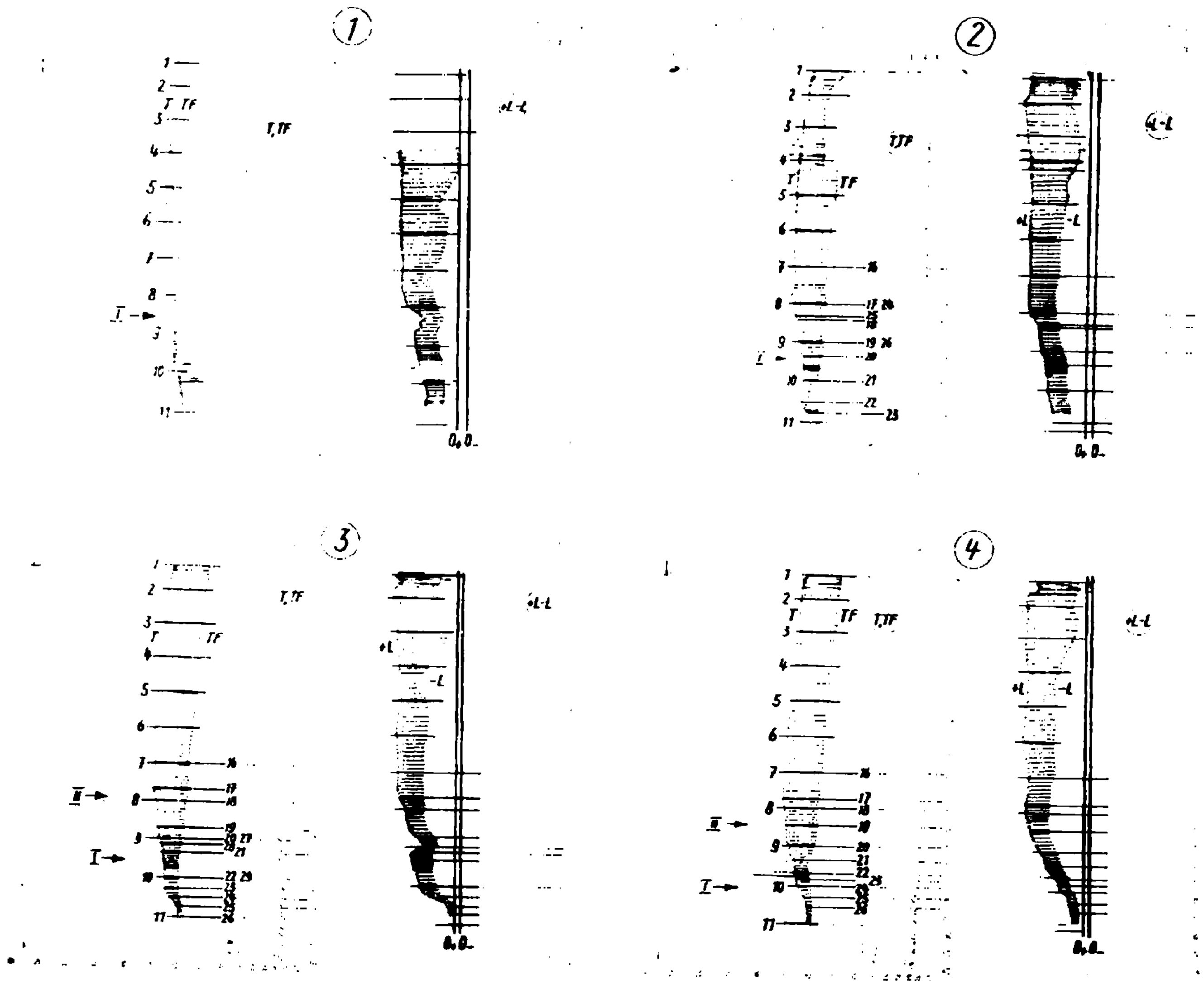
14 Oct. 1970



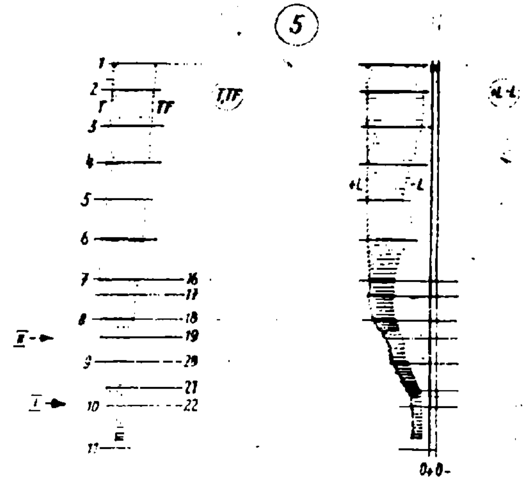
Example
C_2
14 Oct. 1970

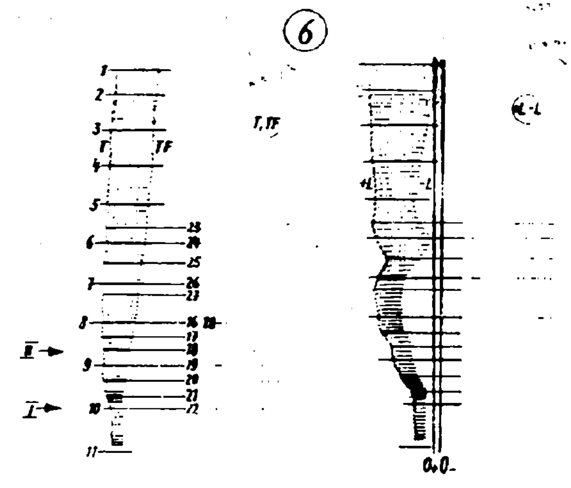


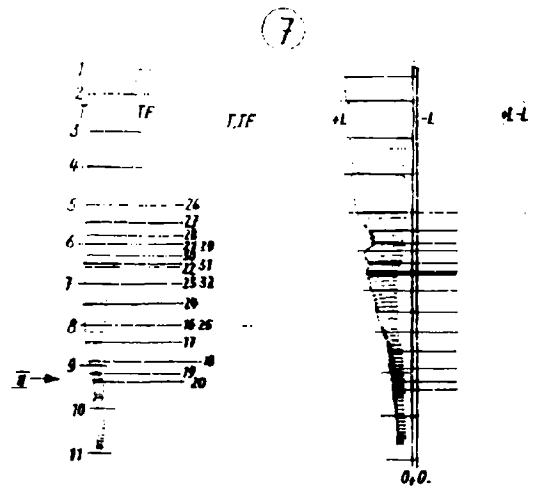
Example
E_1
17 Oct. 1970

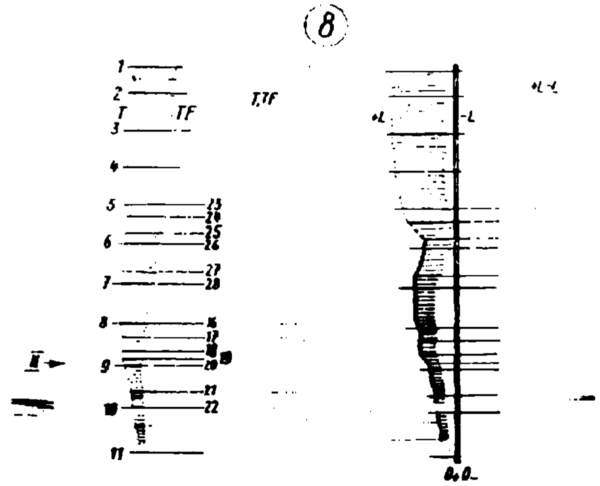


Example
E_2
17 Oct. 1970



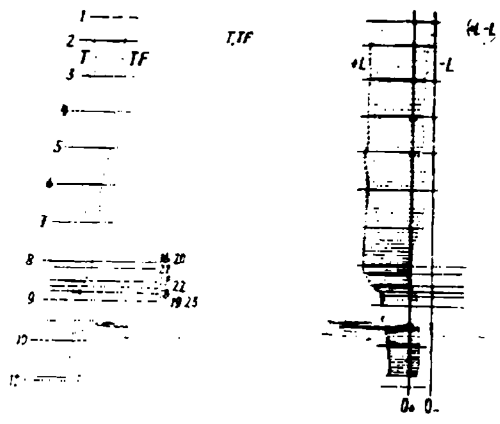




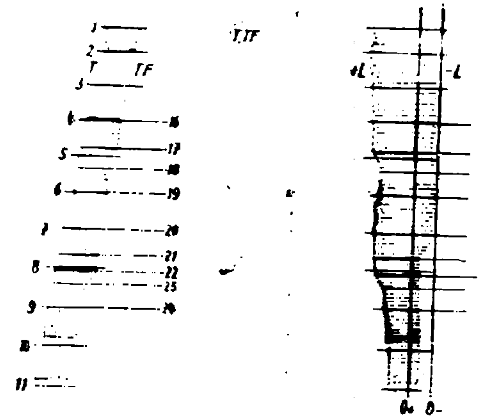


Example
F
30 Sept. 1970

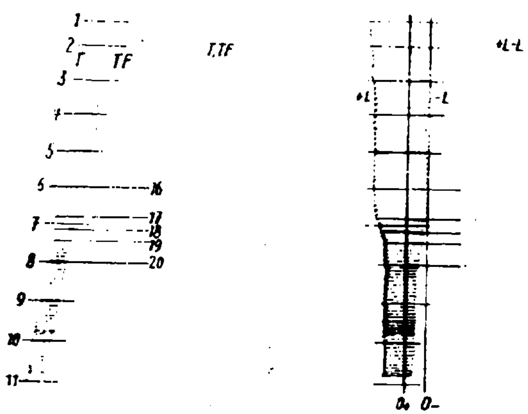
(4)



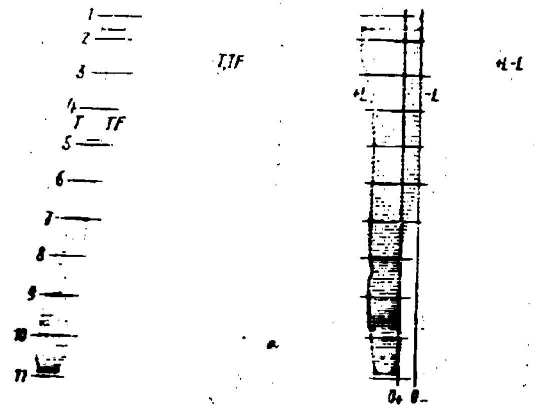
(5)



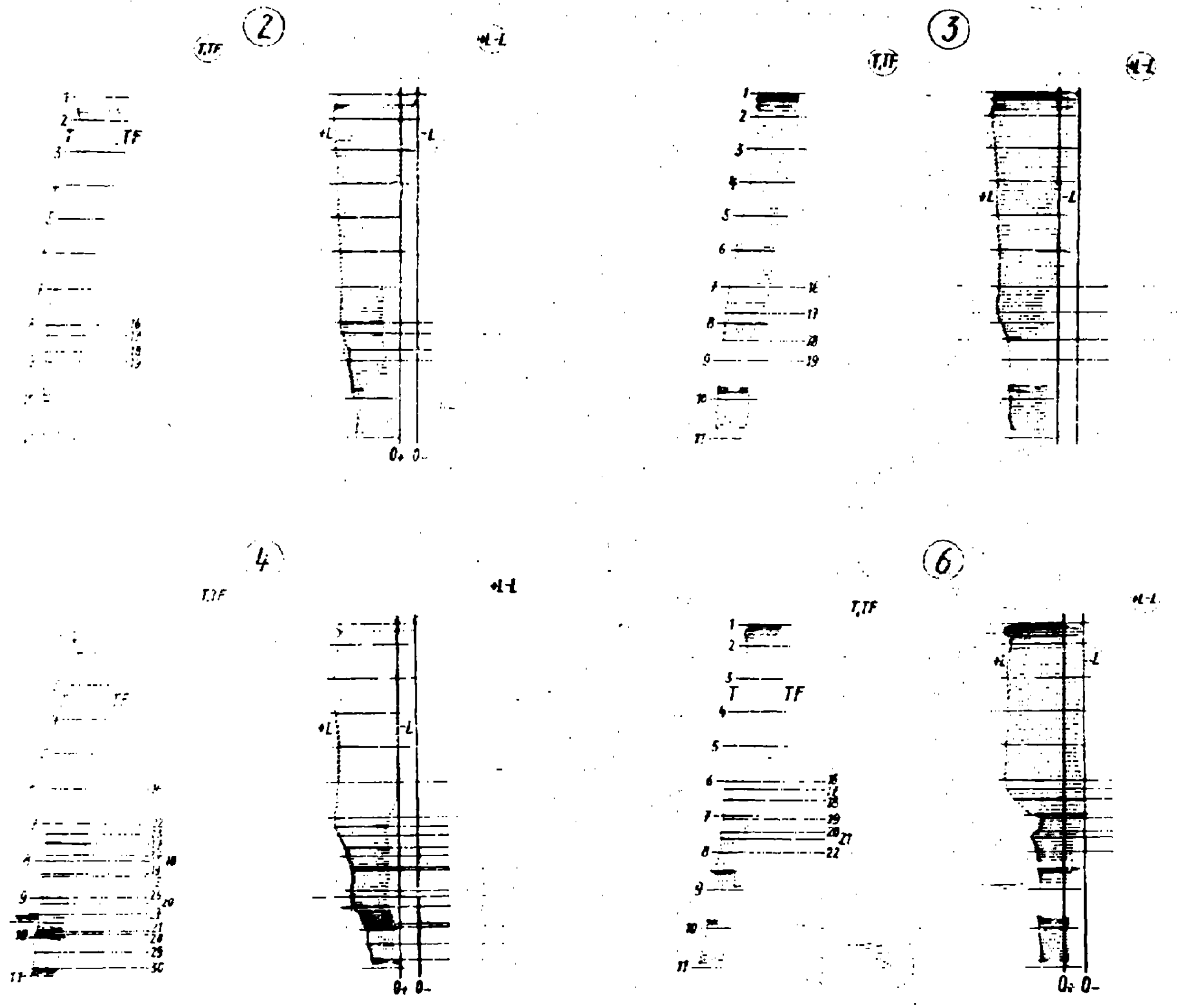
(6)



(7)

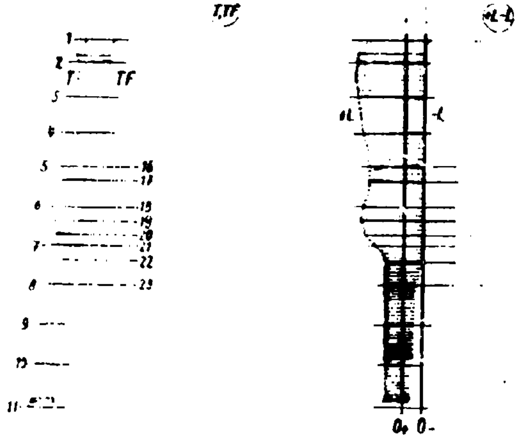


Example
G_1
28 Sept. 1970

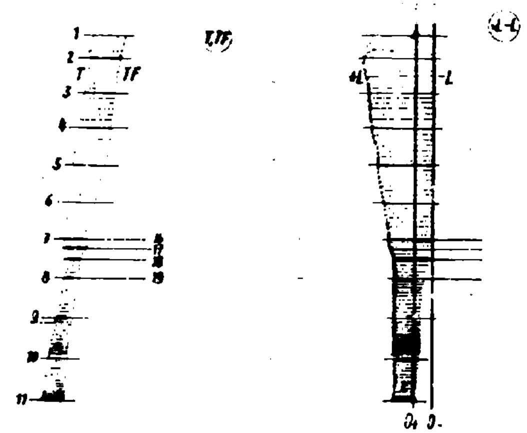


Example
G_2
28 Sept. 1970

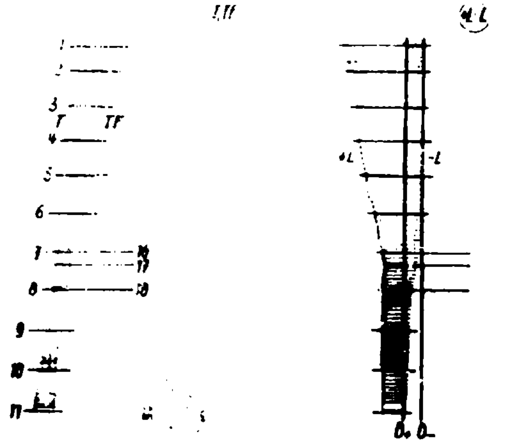
7



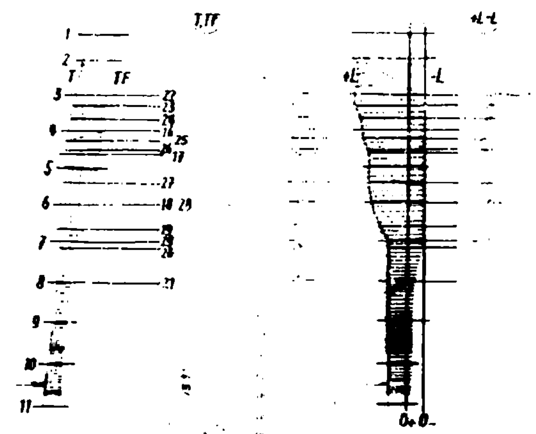
8



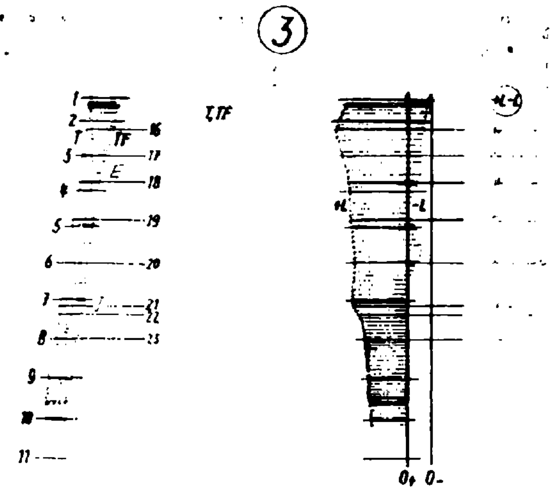
9

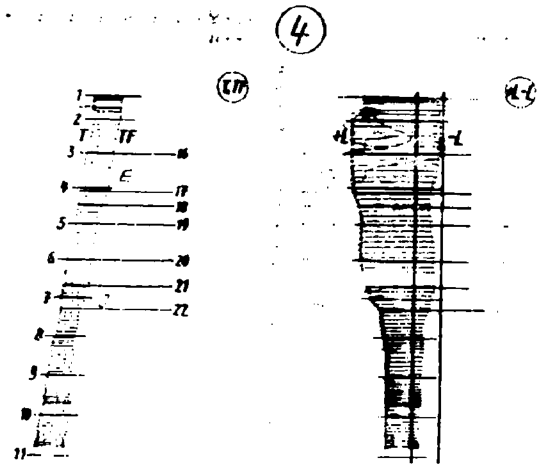


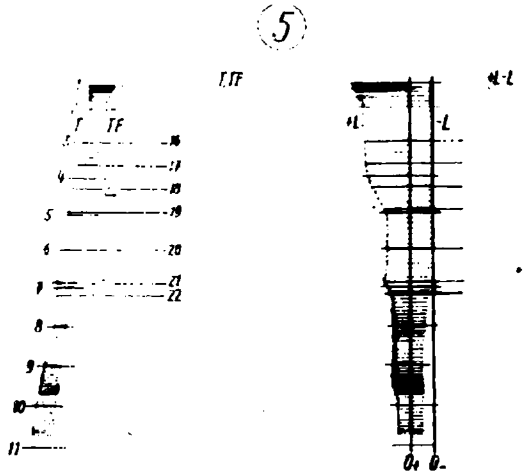
10

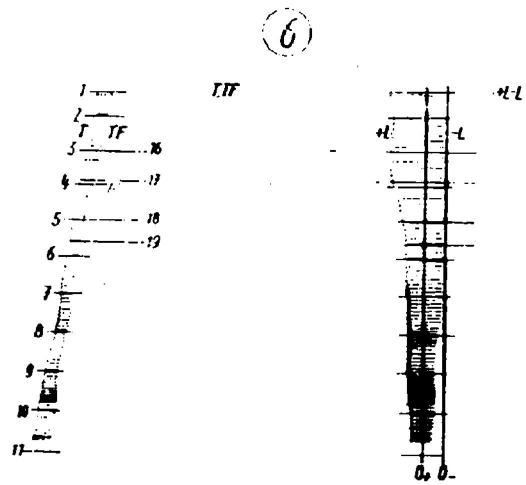


Example
11
26 Sept. 1970

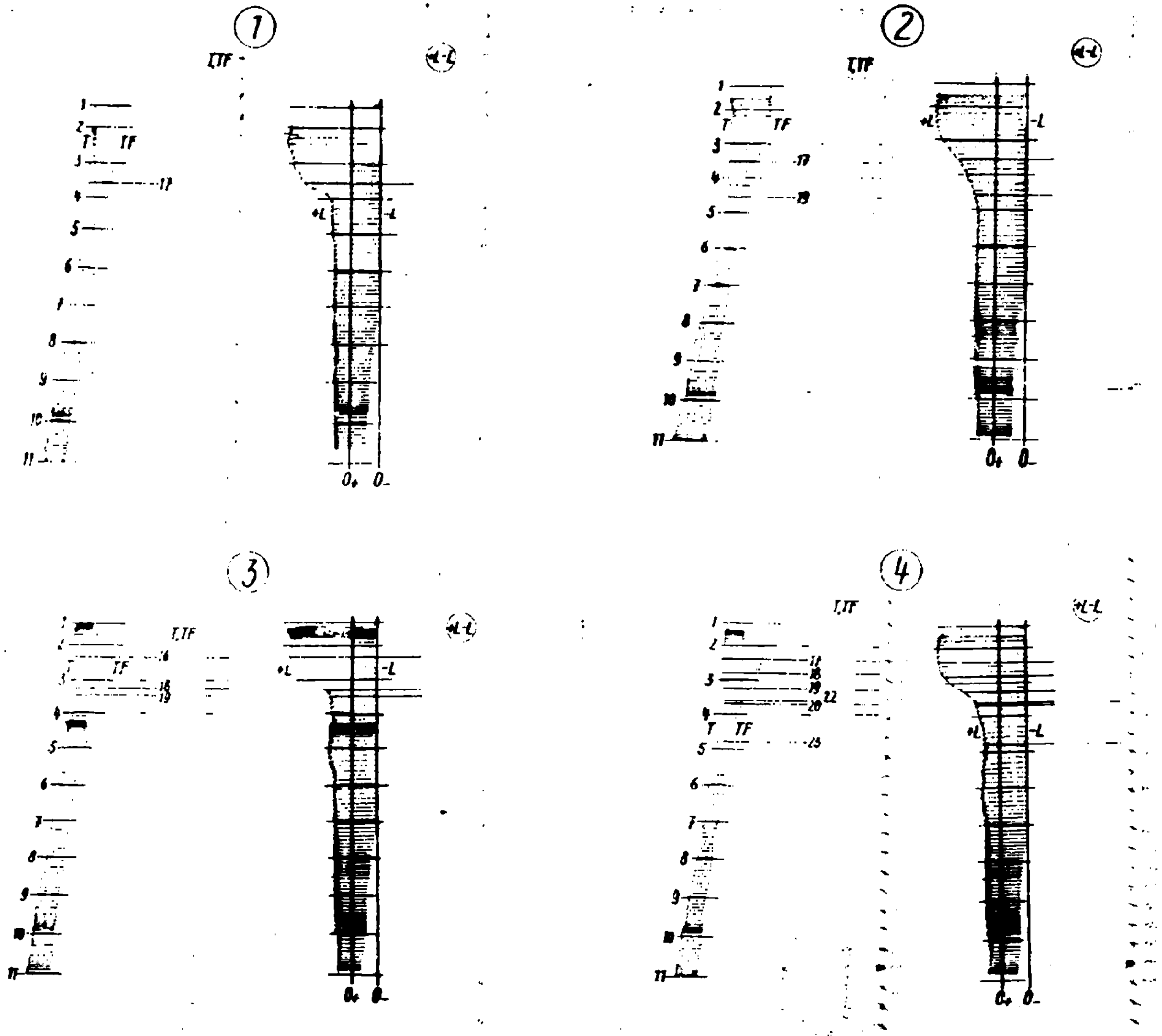








Example
J
17 Sept. 1970



Example A 5 Oct. 1970

0

4-0733 05.10.1970 11.00 Uhr

HAUPT-EINLAUF

Z	H	P	T	TP	PT	TW	K	S	AP	+L	+L	+T+	C
01	3000	7060	+08,4	+00,3	3048	3170	05,07	04,47	[illegible]	01,7	////	[illegible]	03,1
02	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	////	[illegible]	03,0
03	2600	7377	+08,4	+01,2	3032	3146	04,21	04,15	[illegible]	[illegible]	////	[illegible]	[illegible]
04	2400	7553	+08,4	+01,3	3016	3123	04,67	03,45	[illegible]	[illegible]	////	[illegible]	03,3
05	2200	7734	+06,1	+02,3	3005	3126	05,44	04,89	[illegible]	[illegible]	////	1,27	[illegible]
06	2000	7914	+08,4	+03,3	8993	3114	05,31	04,15	57,7	02,6	////	[illegible]	[illegible]
07	1800	8105	+07,9	+04,1	2284	3111	07,15	04,74	57,7	[illegible]	////	1,27	04,3
08	1600	4898	+07,9	+05,8	8284	3111	07,38	05,54	[illegible]	09,1	01,8	1,14	03,3
09	1400	8493	+08,1	+07,0	8347	3199	03,40	07,81	47,0	02,0	01,1	1,83	03,2
10	1800	8898	+08,3	+07,4	8989	3113	03,73	07,03	[illegible]	01,6	01,7	1,14	03,1
11	1000	8908	+09,0	+08,3	8817	3109	10,54	07,40	[illegible]	01,5	01,4	1,32	02,3

Z	DH	TV	G-T	I->	D-S	U-H	G-PT	I	S	A	I	Z
01		+025	,	,	,	,	,	04,40	01,44	,		01
02		+048	+0,49	[illegible]	+0,07	+0,43	+0,20	-01,48	01,61	57,09	[illegible]	02
03		+055	+0,65	+0,17	+0,81	+5,11	+0,34	-01,86	01,30	45,44	50744	03
04		+060	+0,30	+0,18	+0,19	+9,55	+0,70	01,18	00,53	7,74	4276	04
05		+068	+0,35	[illegible]	+0,80	+1,97	+0,74	-00,43	00,97	0,51	540	05
06		+074	+0,38	-0,32	+0,81	+1,94	+0,84	-00,81	00,97	474,39	00	06
07		+087	+0,85	-0,18	+0,04	+1,03	+0,81	-00,81	00,10	10,85	603	07
08		+084	+0,00	-0,61	+0,40	+9,86	+1,00	-00,47	00,86	0,87	678	08
09		+098	+0,10	-1,08	+0,82	+8,98	+7,47	-00,75	00,48	0,47	420	09
10		+098	+0,10	-0,19	+0,04	+1,15	+0,44	01,05	00,48	11,37	10784	10
11		+108	+0,35	-0,34	+0,19	-1,43	+0,60	01,37	01,24	11,41	10763	11

NP-TEMPERATUR

Z	H	P	T	TP	PT	TW	K	S	AP	+L	+L	+T+	C
16	1805	3105	+07,9	+04,1	8994	3111	07,19	04,74	57,7	08,4	////	1,67	[illegible]
17	1705	8801	+07,8	+04,6	8973	3110	07,79	05,13	[illegible]	08,2	////	1,87	[illegible]
18	1605	8898	+07,9	+08,1	8964	3111	07,38	05,58	[illegible]	[illegible]	01,4	1,14	[illegible]
19	1550	9358	+07,8	+08,7	8958	3118	08,00	05,45	79,5	08,0	01,4	1,05	[illegible]
20	1451	9489	+08,3	+08,4	-8953	3189	05,55	07,39	74,2	01,9	01,7	1,11	[illegible]
21	1405	8498	+08,1	+07,0	-8747	3187	08,40	07,31	67,0	02,0	01,1	1,43	[illegible]

Z	DH	TV	G-T	G-P	G-S	U-H	G-PT	I	N	A	I	Z
16		+047	,	,	,	,	,	04,81	00,10	,		16
17	100	+017	+0,10	+0,59	+0,42	-6,00	+1,11	00,34	00,14	0,14	147	17
18	100	+044	+0,10	+0,49	+0,41	-5,37	+0,49	-00,47	00,37	0,74	773	18
19	055	+040	+0,18	-1,19	-0,30	-1,73	+1,18	00,54	00,11	[illegible]	1377	19
20	098	+033	+0,51	-0,58	-0,35	-8,98	+0,47	-00,69	00,43	1,61	776	20
21	048	+096	-0,43	-1,84	-1,34	-9,31	+1,44	00,75	00,72	0,39	370	21

NP-FEUCHTIGKEIT

****
****

1

[illegible]

[illegible]

2

4-0738 05.10.1970 13.30 Uhr

HAUPT-EINLAUF

[illegible]

NP-TEMPERATUR

[illegible]

NP-FEUCHTIGKEIT

****
****

4

[illegible]

****
****

Example B 18 Nov. 1970

```
Z-0851 18.11.1970        12.33 UHR        (1)

HAUPT-NIVEAUS:

MIT. WERTE:

Z  H     P     T     TP    PT    EPT    E     S     HF    +L    -L    +I+   L
               +05,0   ,   1848  1985  02,9  06,1  33,1    ,     ,     ,   03,3

Z  DH    TV    G-T   G-E   G-S   G-HP  G-PT   I     N     A           D     Z
         +035  +0,00 +0,15 +0,09 +1,86 +0,80   ,    00,5  0048,

Z  H     P     T     TP    PT    EPT    E     S     HF    +L    -L    +I+   L
05 2800  7691  +04,4 +00,6 2998  3064  03,87 02,65 37,4 02,6 ////  1,45 04,4
06 2000  7865  +05,5 +00,8 2988  3055  03,43 02,71 37,9 02,5 ////  1,43 04,6
07 1800  8084  +05,3 +00,6 2959  3039  03,87 02,98 43,3 03,3 ////  1,45 03,5
08 1600  8289  +05,1 +01,2 2936  3024  04,58 03,40 51,4 03,0 01,8  1,41 03,2
09 1400  8488  +04,8 +01,7 2913  3012  05,11 03,75 56,4 01,8 01,8  1,40 03,1
10 1200  8713  +05,7 +00,3 2901  2999  05,45 03,75 57,3 01,8 01,8  1,39 08,9
11 1000  8933  +04,3 +03,7 2865  2983  06,47 04,58 77,9 01,1 00,8  1,33 01,9

Z  DH    TV    G-T   G-E   G-S   G-HP  G-PT   I     N     A           D     Z
05       +040   ,     ,     ,     ,     ,    01,73 00,88   ,                05
06       +059  +0,55 [illegible] +0,03 +0,27 +0,47 01,55 00,87  43,08       00 06
07       +056  +0,10 [illegible] +0,13 +2,70 +1,17 01,39 00,35   6,45     6758 07
08       +056  +0,10 [illegible] +0,81 +4,04 +1,16 01,49 00,55   3,81     3750 08
09       +055  +0,10 [illegible] +0,17 +3,75 +1,15 08,47 00,76  11,55    1110A 09
10       +063  +0,40 [illegible] +0,00 +0,68 +0,62 03,04 01,36  15,69    14013 10
11       +050  +0,70 [illegible] +0,36 +0,33 +1,76 03,63 08,64   3,48     3545 11

HP-TEMPERATUR:

Z  H     P     T     TP    PT    EPT    E     S     HF    +L    -L    +I+   L
06 1599  8089  +05,1 +01,8 2936  3086  04,52 03,40 51,4 08,0 01,8  1,41 03,4
17 1493  8248  +05,3 +01,4 2987  3017  04,59 03,41 51,5 01,9 01,8  1,43 03,4
18 1465  8450  +04,9 +01,4 2918  3015  05,01 03,70 57,8 01,9 01,8  1,34 03,3
08 1400  8488  +04,8 +01,7 2913  3012  05,11 03,75 56,9 01,8 01,8  1,46 03,1
20 1306  8598  +05,3 +01,9 2907  3004  05,07 03,46 56,9 01,8 01,8  1,44 03,0
21 1249  8660  +05,7 +02,1 2906  3001  05,04 03,43 55,0 01,7 01,1  1,40 03,8
10 1200  8713  +05,7 +03,3 2931  2999  05,85 03,74 57,3 01,6 01,8  1,39 03,9
83 1096  8884  +05,9 +08,6 2898  2996  05,46 03,84 58,5 01,4 01,1  1,45 08,7
84 1104  8818  +05,3 +08,7 2886  2995  05,96 04,17 64,8 01,4 01,1  1,33 08,5
85 1089  8900  +05,3 +08,7 2870  2988  06,00 04,80 67,3 01,3 00,9  1,40 08,3
11 1000  8933  +04,3 +08,7 2865  2983  06,47 04,58 77,9 01,1 00,8  1,33 01,9

Z  DH    TV    G-T   G-E   G-S   G-HP  G-PT   I     N     A           D     Z
08       +056   ,     ,     ,     ,     ,    01,95 00,56   ,                08
17 104   +056  +0,13 +0,07 +0,01 +0,05 +0,44 08,88 00,59 110,84       00 17
18 049   +055  +0,61 +0,65 +0,59 +8,77 +1,63 04,36 00,65   4,88     4575 18
08 045   +055  +0,00 +0,81 +0,11 +8,43 +1,04 08,47 00,74   5,42     2466 08
20 093   +059  +0,43 +0,04 +0,07 +8,16 +0,59 04,75 00,91   1,72    11063 20
21 057   +063  +0,80 +0,05 +0,38 +3,23 +0,31 08,98 01,09    ,75     4468 21
10 048   +063  +0,00 +0,48 +0,06 +4,57 +1,03 03,04 01,06 145,86       00 10
83 103   +065  +0,19 +0,18 +0,06 +1,20 +0,43 03,35 01,37   9,41     8864 83
84 007   +060  +0,85 +8,37 +4,56 +5,76 +1,59 03,33 01,50   0,45      414 84
85 074   +060  +0,30 +0,13 +3,04 +1,88 +1,33 03,57 01,95   6,47     4308 85
11 089   +050  -3,38 +1,60 +1,07 +5,77 +4,56 03,63 08,64   0,47      948 11

HP-FEUCHTIGKEIT:

----
Z  H     P     T     TP    PT    EPT    E     S     HF    +L    -L    +I+   L
10 1198  8713  +05,7 +03,3 8901  8999  05,85 03,74 57,3 01,A 01,8  1,89 08,9
88 1185  8793  +05,9 +08,5 8865  8994  05,33 03,76 57,4 01,6 01,8  1,40 08,9
89 1070  8853  +05,7 +08,6 8867  8989  05,55 03,91 40,5 01,5 01,3  1,45 08,6
30 1046  8880  +05,5 +08,6 8863  8990  05,46 04,13 65,1 01,4 00,7  1,53 08,4
11 0998  8933  +04,3 +08,7 8865  8983  06,47 04,58 77,9 01,1 00,8  1,33 01,9

Z  DH    TV    G-T   G-E   G-S   G-HP  G-PT   I     N     A           D     Z
10       +063   ,     ,     ,     ,     ,    03,07 01,07   ,                10
88 073   +065  +0,87 +0,18 +0,06 +0,18 +0,75 03,87 01,16  29,56    87606 88
89 054   +063  +0,37 +0,39 +0,83 +5,76 +1,41 03,44 01,51   3,83     4984 89
30 084   +068  +0,68 +1,37 +0,92 +6,67 +1,46 03,51 01,74   8,39     8170 30
11 047   +050  -4,58 +1,84 +0,81 +6,85 +1,63 03,68 08,64   1,35     1010 11
```

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Z-0850 18.11.1970        15.44 UHR        (4)

HAUPT-NIVEAUS:

MIT. WERTE:

Z  H     P     T     TP    PT    EPT    E     S     HF    +L    -L    +I+   L
               +04,0   ,   2457  3057  [illegible] 03,3 54,A  ,     ,     ,   03,1

Z  DH    TV    G-T   G-E   G-S   G-HP  G-PT   I     N     A           D     Z
         +047  +0,30 +0,17 +0,09 +0,88 +0,54   ,    01,4  1110,

Z  H     P     T     TP    PT    EPT    E     S     HF    +L    -L    +I+   L
01 3000  7010  [illegible]
02 2800  7130  [illegible]
03 2600  7321  [illegible]
04 2400  7504  [illegible]
05 2200  7745  [illegible]
06 2000  7444  [illegible]
07 1800  4044  [illegible]
08 1600  4485  [illegible]
09 1400  4422  [illegible]
10 1200  4734  [illegible]
11 1000  [illegible]

Z  DH    TV    G-T   G-E   G-S   G-HP  G-PT   I     N     A           D     Z
01       [illegible]                                                       01
02       [illegible]                                                       02
03       [illegible]                                                       03
04       [illegible]                                                       04
05       [illegible]                                                       05
06       [illegible]                                                       06
07       [illegible]                                                       07
08       [illegible]                                                       08
09       [illegible]                                                       09
10       [illegible]                                                       10
11       [illegible]                                                       11

HP-TEMPERATUR:

Z  H     P     T     TP    PT    EPT    E     S     HF    +L    -L    +I+   L
[illegible]

Z  DH    TV    G-T   G-E   G-S   G-HP  G-PT   I     N     A           D     Z
[illegible]
```

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Z-0852 18.11.1970        13.33 UHR        (2)

HAUPT-NIVEAUS:

MIT. WERTE:

Z  H     P     T     TP    PT    EPT    E     S     HF    +L    -L    +I+   L
               +04,0   ,   2965  3053  04,1  03,2  50,3   ,     ,     ,   03,3

Z  DH    TV    G-T   G-E   G-S   G-HP  G-PT   I     N     A           D     Z
         +045  +0,31 +0,14 +0,07 +0,56 +0,55   ,    01,9  0044,

Z  H     P     T     TP    PT    EPT    E     S     HF    +L    -L    +I+   L
01 3000  7080  [illegible]
02 2800  7148  +00,5 +03,6 3018  3091  03,84 08,66 51,4 08,0 ////  1,39 03,4
03 2600  7321  +01,9 +01,9 3006  3085  03,37 08,67 47,2 08,5 ////  1,39 03,1
04 2400  7515  +03,0 +01,1 2998  3077  03,54 08,93 45,3 08,3 ////  1,39 04,0
05 2200  7704  +04,8 +00,1 2982  3073  03,44 08,96 41,8 08,4 ////  1,39 04,8
06 2000  7896  +05,6 +00,5 2982  3060  03,47 08,88 40,3 08,3 ////  1,39 04,1
07 1800  8093  +05,8 +01,2 2962  3058  04,30 03,31 48,6 08,1 ////  1,39 03,4
08 1600  [illegible]
09 1400  8508  +05,4 +08,1 2918  3019  05,85 03,65 58,5 01,5 01,1  1,35 08,7
10 1200  8714  +06,3 +08,7 2907  3007  05,34 03,82 55,9 01,3 01,1  1,31 08,5
11 1000  8931  +05,4 +03,1 2877  2991  06,87 04,38 79,9 01,3 01,0  1,34 08,4

Z  DH    TV    G-T   G-F   G-S   G-HP  G-PT   I     N     A           D     Z
01       +034   ,     ,     ,     ,     ,    08,61 08,74   ,                01
02       +000  +0,97 +0,06 +0,08 +3,88 +0,08 08,49 01,64   4,46     1356 02
03       +083  +0,70 +0,05 +0,01 +8,04 +0,31 08,81 01,85  45,18    46365 03
04       +034  +0,35 +0,06 +0,03 +0,97 +0,47 01,94 00,98  85,48    81563 04
05       +081  +0,83 +0,06 +0,01 +8,03 +0,80 01,74 00,88  41,93    44871 05
06       +080  +0,80 +0,00 +0,03 +0,48 +0,58 01,55 00,77 406,81       00 06
07       +083  +0,10 +0,38 +0,81 +3,15 +0,94 01,38 00,90  66,10    66489 07
08       +078  +0,45 +0,18 +0,13 +4,64 +0,56 01,68 01,49   7,93     1644 08
08       +080  +0,48 +0,87 +0,40 +8,58 +1,71 08,39 08,67  18,18    11744 08
10       +058  +0,45 +0,05 +0,01 +1,89 +0,55 08,98 03,55  53,46    80764 10
11       +051  +0,45 +0,47 +0,88 +7,60 +1,48 03,48 04,80 844,73       00 11

HP-TEMPERATUR:

Z  H     P     T     TP    PT    EPT    E     S     HF    +L    -L    +I+   L
07 1801  8093  +05,8 +01,3 8963  3058  04,30 03,31 46,6 08,1 ////  1,39 03,6
17 1669  6800  +05,9 +01,4 8953  3041  04,30 03,88 46,6 08,0 ////  1,39 03,5
18 1688  8866  +07,8 +01,5 8960  3034  03,69 08,78 36,3 08,1 ////  1,36 03,7
08 1601  8895  +04,7 +01,6 8958  3033  04,06 03,09 41,3 08,0 01,8  1,47 03,8
80 1565  8338  +04,6 +01,3 8958  3083  04,78 03,38 55,5 01,7 01,8  1,48 03,0
09 1401  8508  +05,4 +08,1 8918  3019  05,85 03,65 58,5 01,5 01,1  1,35 08,7

Z  DH    TV    G-T   G-E   G-S   G-HP  G-PT   I     N     A           D     Z
07       +063   ,     ,     ,     ,     ,    01,39 00,93   ,                07
17 106   +064  +0,09 +0,08 +0,03 +0,13 +0,94 01,46 01,07  16,71    16987 17
18 067   +076  +1,93 +0,93 +0,78 +3,18 +1,01 01,83 01,10 184,38       00 18
08 086   +078  +1,86 +1,38 +1,01 +8,89 +3,08 01,68 01,49   0,48      438 08
80 036   +056  +5,86 +8,00 +1,46 +9,40 +6,56 01,98 01,76   3,16     3079 80
09 163   +060  +0,37 +0,84 +0,17 +1,81 +0,65 08,39 08,57  19,47    18678 09

HP-FEUCHTIGKEIT:

----
Z  H     P     T     TP    PT    EPT    E     S     HF    +L    -L    +I+   L
07 1801  8093  +05,8 +01,3 8963  3058  04,30 03,31 46,6 08,1 ////  1,39 03,6
83 1665  8810  +05,0 +01,4 8943  3040  04,80 03,65 55,0 08,0 ////  1,39 03,5
84 1666  8809  +07,8 +01,4 8966  3043  03,81 08,89 37,5 08,1 ////  1,39 03,7
85 1577  8383  +04,9 +01,3 8931  3085  04,73 03,54 54,5 01,7 01,1  1,50 08,9
86 1519  8318  +04,9 +01,5 8931  3039  04,94 03,70 58,9 01,6 01,8  1,36 08,9
87 1497  8402  +04,9 +01,7 8984  3023  05,13 03,80 59,1 01,6 01,3  1,17 08,9
09 1401  8508  +05,4 +08,1 8918  3019  05,85 03,65 58,5 01,5 01,1  1,35 08,7

Z  DH    TV    G-T   G-E   G-S   G-HP  G-PT   I     N     A           D     Z
07       +063   ,     ,     ,     ,     ,    01,39 00,93   ,                07
83 116   +056  -0,89 -0,43 -0,89 -7,84 +1,77 01,44 01,10  14,78    14998 83
84 005   +077  +1,95 -8,03 -4,90 -6,57 +5,67 01,44 01,08   0,01       08 84
85 108   +058  -2,11 -0,48 -0,59 -5,60 +3,86 01,95 01,38   0,38     8870 85
86 001   +058  +0,00 +0,67 +8,06 +3,13 +1,03 01,95 01,88   0,95      434 86
87 081   +055  +0,00 +0,83 +0,13 -8,71 +1,03 08,16 01,95 116,88       00 87
09 095   +060  +0,88 +0,13 +0,05 +3,46 +0,48 08,39 08,57  18,44    11867 09
```

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Z-0856 18.11.1970        14.45 UHR        (6)

HAUPT-NIVEAUS:

MIT. WERTE:

Z  H     P     T     TP    PT    EPT    E     S     HF    +L    -L    +I+   L
               +04,5   ,   2971  3044  04,4  03,5  53,0   ,     ,     ,   03,4

Z  DH    TV    G-T   G-E   G-S   G-HP  G-PT   I     N     A           D     Z
         +051  +0,31 +0,18 +0,05 +0,14 +0,55   ,    00,4  0017,

Z  H     P     T     TP    PT    EPT    E     S     HF    +L    -L    +I+   L
01 3000  7010  +00,4 +03,2 3011  3103  03,71 03,41 64,1 01,8 ////  1,33 08,4
02 2800  7140  +00,4 +04,3 3014  3103  03,77 03,49 59,1 04,1 ////  1,33 03,4
03 2600  7322  +01,4 +01,0 3008  3104  04,07 03,43 60,3 08,3 ////  1,33 04,3
04 2400  7501  +03,3 +03,3 3001  3095  04,17 03,44 59,1 08,4 ////  1,33 04,4
05 2200  7444  +04,5 +03,4 2992  3049  04,40 03,40 44,4 08,5 ////  1,33 04,6
06 2000  7449  +05,4 +01,3 2945  3074  04,14 03,45 47,2 08,5 ////  1,33 04,5
07 1850  8088  +07,1 +08,1 6974  3047  04,41 03,44 43,4 08,5 ////  1,33 04,6
08 1600  8247  +08,4 +08,7 2954  3057  04,40 03,31 40,4 08,3 01,4  1,45 03,4
09 1400  8444  +07,4 +08,3 2944  3044  04,14 03,47 38,4 01,9 01,4  1,32 03,3
10 1450  8724  +06,3 +03,4 8909  3018  05,53 03,43 58,4 01,5 01,4  1,04 03,0
11 1000  8881  +05,4 +03,0 8874  8990  06,16 04,31 74,4 01,5 01,4  1,05 08,4

Z  DH    TV    G-T   G-E   G-S   G-HP  G-PT   I     N     A           D     Z
01       +033   ,     ,     ,     ,     ,    08,47 03,49   ,                01
02       +069  +0,49 -0,11 -0,04 +0,74 +0,10 08,45 03,50   1,44     1835 02
03       +084  +0,70 -0,05 -0,17 -0,64 +0,31 08,37 03,36   4,32     4453 03
04       +034  +0,73 +0,05 +0,04 +4,05 +0,25 08,14 03,33  15,64    14474 04
05       +053  +0,83 +0,01 +0,03 +1,17 +0,47 01,43 03,45   1,45    14758 05
06       +041  +0,85 +0,04 +0,04 +1,84 +0,34 01,71 03,43  43,14    44117 06
07       +074  +0,45 +0,04 +0,07 +1,44 +0,34 01,55 00,40  14,54     1459 07
08       +047  +0,55 +0,04 +0,05 +1,73 +0,44 01,44 00,33   1,74      1731 08
09       +043  +0,80 +0,14 +0,14 +0,74 +1,25 08,44 00,53   3,47     3373 09
10       +044  -0,75 +0,74 +0,44 +4,47 +1,41 08,57 00,74   4,84     4758 10
11       +041  -0,45 +0,33 +0,14 +5,47 +1,49 08,44 00,43  40,64    37447 11

HP-TEMPERATUR:

Z  H     P     T     TP    PT    EPT    E     S     HF    +L    -L    +I+   L
07 1400  8044  +07,1 +08,1 8974  3044  04,40 03,42 4,4  08,5 ////  1,43 03,4
17 1481  8428  +04,0 +08,5 8473  3040  04,34 03,47 40,4 08,5 ////  1,43 04,5
04 1453  8447  +04,2 +08,7 8944  3057  04,40 03,31 40,4 08,3 01,6  1,45 03,9
17 1544  8337  +06,6 +08,7 8481  3050  04,44 03,14 41,4 08,4 01,5  1,44 03,7
80 1444  8340  +04,4 +08,4 8454  3044  04,47 03,34 41,1 08,1 01,5  1,34 03,4
09 1421  8444  +07,4 +08,3 8944  3044  04,14 03,04 38,7 01,4 01,4  1,34 03,3
84 1358  8534  +04,4 +08,4 8430  3044  05,15 03,74 51,4 01,7 01,3  1,43 03,1
81 1307  8545  +05,4 +08,4 8444  3043  05,40 03,77 54,5 01,7 01,3  1,44 03,0
84 1277  8544  +04,1 +08,4 8415  3014  05,47 03,44 57,3 01,4 01,4  1,14 03,0
10 1241  8704  +04,3 +08,4 8404  3014  05,57 03,44 58,4 01,5 01,4  1,04 03,0

Z  DH    TV    G-T   G-E   G-S   G-HP  G-PT   I     N     A           D     Z
07       +074   ,     ,     ,     ,     ,    01,55 00,40   ,                07
17 144   +045  +0,43 +0,04 +0,10 +0,98 +0,34 01,40 00,34   4,43     6414 17
04 057   +047  +0,35 +0,15 +0,07 +0,43 +0,47 01,44 00,33  (0,37)     345 04
17 051   +045  +0,37 +0,14 +0,04 +0,74 +1,44 01,41 00,34   2,04     6517 17
20 082   +047  +0,44 +0,04 +0,07 +1,55 +0,41 04,07 00,43   4,04     3443 20
04 044   +043  +0,41 +0,34 +0,37 +0,84 +1,47 04,44 00,53   0,44     4044 04
88 044   +075  +0,07 +0,31 +1,45 +0,47 +0,31 04,31 00,44   1,57     1437 88
83 044   +170  +0,71 +0,47 +0,44 +1,44 +1,44 04,41 00,44  40,45    19340 83
84 031   +141  +1,44 +0,44 +0,44 +1,73 +0,74 04,47 00,74  47,47    45711 84
10 074   +017  +0,71 +0,17 +0,74 +1,44 +1,75 04,54 00,74  15,15    35,70 10
```

Example C_1 14 Oct. 1970

Z+0779 14.10.1970 09.22 UHR

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HAUPT-NIVEAUS:

Z	H	P	T	TF	PT	EPT	E	S	RF	+L	-L	+I-	L
01	3000	7170	+01,9	+03,1	3085	3125	04,15	03,71	58,1	01,9	////	1,33	03,4
02	2800	7300	+02,4	+00,8	3019	3127	04,36	03,87	59,3	01,9	////	1,33	03,4
03	2600	7488	+03,6	+00,9	3036	3145	05,16	04,24	63,3	01,7	////	1,33	03,0
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
05	2200	7657	+06,1	+02,5	2998	3124	05,44	04,38	57,7	08,0	////	1,33	03,5
06	2000	8051	+07,8	+03,1	2983	3096	05,45	04,62	53,6	08,0	////	1,33	03,5
07	1800	8248	+08,3	+03,1	2974	3083	05,45	04,18	49,7	08,9	////	1,33	03,5
08	1600	8451	+06,3	+04,1	2955	3067	05,73	04,62	51,7	01,7	01,1	1,51	02,9
09	1400	8650	+07,6	+04,3	2948	3067	06,30	04,54	59,5	01,6	01,4	1,33	03,3
10	1400	8871	+07,8	+05,4	2907	3046	07,16	05,32	71,4	01,4	01,1	1,64	04,5
11	1000	9089	+07,9	+06,6	2898	3050	09,26	04,34	84,5	00,2	00,8	1,14	01,4

Z	DH	TV	G+T	G+E	G+S	G+RF	G+PT	I	M	A	D	Z
01		+025	,	,	,	,	,	04,73	01,03	,		01
02		+034	+0,62	+0,24	+0,12	+0,48	+0,32	03,41	00,74	11,53	13740	02
03		+045	+0,50	+0,26	+0,17	+0,03	+0,58	03,19	00,67	114,75	00	03
04		+057	+0,60	+0,07	+0,01	+1,71	+0,40	03,87	00,74	51,34	34574	04
05		+068	+0,55	+0,11	+0,03	+1,10	+0,45	01,85	00,53	4,69	7850	05
06		+075	+0,55	+0,00	+0,05	+0,04	+0,45	01,89	00,47	57,41	56931	06
07		+090	+0,55	+0,09	+0,05	+1,92	+0,45	01,89	00,40	30,36	30351	07
08		+098	+0,10	+0,14	+0,05	+0,98	+0,78	03,47	01,58	3,74	727	08
09		+085	+0,35	[illegible]	[illegible]	+3,94	+1,36	05,47	01,96	47,52	45487	09
10		+067	+0,05	+0,13	+0,32	+5,97	+1,01	07,41	04,21	8,97	4348	10
11		+087	+0,05	+0,13	+0,51	+7,54	+0,99	10,18	05,14	19,51	17706	11

HP-TEMPERATUR:

Z	H	P	T	TF	PT	EPT	E	S	RF	+L	-L	+I-	L
16	2245	7120	+02,4	+01,1	3028	3125	04,01	03,47	54,9	01,8	////	1,33	03,4
17	2470	7437	+03,0	+00,8	3009	3135	04,46	03,65	57,3	01,9	////	1,33	03,2
18	2749	7300	+02,4	+00,8	3019	3127	04,36	03,47	59,3	01,9	////	1,33	03,4
19	2636	7442	+03,4	+00,4	3004	3127	05,19	04,35	66,5	01,6	////	1,33	03,1
20	2402	7482	+03,6	+00,9	3004	3145	05,16	04,24	63,3	01,7	////	1,33	03,0
21	1950	8249	+08,3	+03,7	2974	3083	05,45	04,18	49,7	08,0	////	1,33	03,5
22	1700	8350	+08,4	+03,7	2966	3075	05,57	04,17	50,6	01,9	////	1,33	03,3
23	1650	8451	+06,3	+04,1	2955	3067	05,73	04,62	51,7	01,7	01,1	1,51	02,9
24	1529	8650	+07,6	+04,3	2948	3067	06,30	04,54	59,5	01,6	01,4	1,33	03,3
25	1361	8730	+07,8	+04,5	2944	3066	06,57	04,84	61,6	01,4	01,4	1,33	03,3
26	1245	8819	+07,8	+05,0	2913	3046	07,09	05,08	66,9	01,4	01,1	1,40	04,1
27	1200	8871	+07,8	+05,4	2907	3046	07,58	05,32	71,4	01,4	01,1	1,64	04,5
28	1000	9089	+07,9	+06,6	2898	3050	08,54	05,77	80,6	01,3	00,8	1,15	01,4
29	1000	9089	+07,9	+06,6	2898	3050	09,28	06,34	86,5	00,9	00,8	1,14	01,4

Z	DH	TV	G+T	G+E	G+S	G+RF	G+PT	I	M	A	D	Z
16		+027	,	,	,	,	,	04,63	03,97	,		16
17	075	+038	+1,06	+0,64	+0,44	+0,35	+0,10	06,51	03,94	64,09	00	17
18	070	+034	+1,46	+0,12	+0,05	+0,47	+1,38	02,39	03,77	4,65	4236	18
19	163	+041	+0,37	+0,39	+0,05	+4,39	+0,66	02,16	03,63	199,85	00	19
20	035	+045	+1,11	+0,30	+0,33	+3,49	+1,15	02,18	00,47	19,47	43233	20
21	192	+030	+0,58	+0,05	+0,01	+1,73	+0,44	03,27	00,40	83,03	26605	21
22	103	+091	+0,10	+0,14	+0,05	+0,41	+1,94	03,34	03,63	3,47	460	22
23	093	+098	+0,10	+0,14	+0,05	+3,93	+0,98	03,47	01,58	1,35	1318	23
24	130	+065	+0,35	+0,28	+0,15	+3,94	+1,36	05,74	02,60	41,74	39450	24
25	038	+046	+0,00	+0,57	+0,36	+1,41	+1,01	06,11	02,06	124,74	00	25
26	105	+044	+0,00	+0,54	+0,33	+5,08	+1,01	07,33	02,74	13,50	12946	26
27	055	+047	+0,00	+0,86	+0,33	+4,08	+1,01	07,45	04,21	2,34	2455	27
28	050	+038	+0,00	+1,92	+1,25	+1,07	+1,01	06,55	04,70	3,08	2778	28
29	149	+029	+0,07	+0,46	+0,24	+3,24	+0,93	10,18	05,16	65,70	77562	29

HP-FEUCHTIGKEIT:

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HAUPT-NIVEAUS:

Z	H	P	T	TF	PT	EPT	E	S	RF	+L	-L	+I-	L
01	3000	7150	+02,4	+00,3	3033	3142	04,42	04,38	62,9	01,9	////	1,45	03,4
02	2800	7881	+02,5	+00,3	3021	3140	05,04	04,32	67,4	02,0	////	1,45	03,7
03	2600	7466	+03,7	+00,7	3010	3143	04,94	04,13	62,5	02,0	////	1,45	03,6
04	2400	7654	+04,7	+01,3	2999	3113	04,99	04,06	58,3	01,8	////	1,45	03,4
05	2200	7847	+01,6	+02,2	2994	3123	05,39	04,39	58,8	01,8	////	1,45	03,5
06	2000	8044	+06,4	+04,7	2977	3098	05,34	04,14	54,7	01,9	////	1,45	03,2
07	1800	8246	+07,8	+03,4	2964	3094	05,72	04,33	56,3	01,3	////	1,25	03,4
08	1600	8452	+05,0	+05,4	2907	3097	04,75	07,46	94,6	07,2	07,8	1,16	00,4
09	1400	8665	+06,7	+06,1	2916	3047	07,07	07,54	98,4	00,5	00,4	1,47	00,4
10	1200	8881	+07,9	+06,9	2907	3074	07,37	06,59	87,5	00,6	00,5	1,16	01,1
11	1000	9103	+09,3	+07,8	2901	3073	09,71	07,54	84,6	00,6	00,5	1,32	01,1

Z	DH	TV	G+T	G+E	G+S	G+RF	G+PT	I	M	A	D	Z
01		+030	,	,	,	,	,	05,77	01,07	,		01
02		+035	+0,48	+0,45	+0,14	+3,07	+0,74	03,69	00,94	44,55	33626	02
03		+044	+0,45	+0,75	+0,07	+0,67	+0,59	03,05	01,34	136,36	00	03
04		+053	+0,50	+0,08	+0,03	+1,65	+0,53	03,44	01,24	41,47	65424	04
05		+060	+0,45	+0,60	+0,11	+0,44	+0,54	03,46	01,39	141,31	00	05
06		+073	+0,50	+0,03	+0,07	+2,84	+0,56	03,71	01,57	173,77	00	06
07		+079	+0,30	+0,19	-0,09	+3,76	+0,73	03,97	02,10	12,70	12865	07
08		+069	+0,70	+1,58	+1,07	+9,38	+1,76	04,63	03,37	1,96	1904	08
09		+078	+0,45	+0,16	+0,04	+1,19	+0,59	05,29	02,46	58,24	46477	09
10		+090	+0,40	+0,15	+0,04	+4,49	+0,40	05,95	14,51	871,15	00	10
11		+104	+0,70	+0,16	+0,03	+4,61	+0,30	06,06	15,47	3726,60	00	11

HP-TEMPERATUR:

Z	H	P	T	TF	PT	EPT	E	S	RF	+L	-L	+I-	L
16	1999	8044	+06,6	+04,7	2977	3018	05,34	04,14	54,7	01,6	////	1,25	03,4
17	1869	8175	+07,0	+03,2	2968	3082	05,63	04,35	56,1	01,4	////	1,25	03,4
18	1799	9646	+07,6	+03,4	2962	3078	05,78	04,33	56,3	01,3	////	1,25	03,4
19	1747	8899	+07,1	+03,6	2956	3078	05,44	04,50	59,3	00,9	////	1,25	01,7
20	1705	8348	+06,8	+04,2	2946	3083	06,81	05,10	76,4	00,4	////	1,25	00,8
21	1678	8378	+06,4	+04,9	2741	3095	07,63	05,46	81,4	00,1	////	1,25	00,8
22	1603	8444	+05,6	+05,3	2967	3096	08,43	06,38	93,5	00,4	////	1,25	00,4

Z	DH	TV	G+T	G+E	G+S	G+RF	G+PT	I	M	A	D	Z
16		+073	,	,	,	,	,	04,73	01,58	,		16
17	130	+077	+0,31	-0,24	+0,18	+1,07	+0,73	03,61	03,02	34,41	34456	17
18	067	+079	+0,69	-0,13	-0,05	+0,60	+0,74	04,93	02,18	4,16	4180	18
19	051	+078	+0,17	+0,51	+0,33	+5,76	+1,65	04,18	05,50	6,76	986	19
20	041	+076	+0,78	+1,98	+1,40	+3,01	+1,80	04,31	14,53	2,50	665	20
21	038	+274	+1,45	+2,33	+2,13	+5,99	+1,89	04,43	45,74	6,55	574	21
22	067	+086	+0,89	+1,10	+0,41	+4,03	+1,94	04,63	60,46	22,63	11786	22

HP-FEUCHTIGKEIT:

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Z	H	P	T	TF	PT	EPT	E	S	RF	+L	-L	+I-	L
23	1799	8646	+07,8	+03,4	2962	3378	05,72	04,33	56,3	01,3	////	1,25	02,4
24	1738	8354	+07,4	+03,7	2956	3376	06,04	04,53	59,4	00,5	////	1,25	01,5
25	1673	8375	+06,5	+04,8	2742	3383	07,44	05,71	77,1	00,4	////	1,25	00,3
26	1597	8458	+05,8	+05,4	2927	3097	08,75	06,46	94,9	00,8	00,8	1,16	00,4

Z	DH	TV	G+T	G+E	G+S	G+RF	G+PT	I	M	A	D	Z
23		+074	,	,	,	,	,	04,73	03,72	,		23
24	060	+073	+0,00	+0,58	+0,34	+3,14	+1,64	04,61	04,44	4,42	648	24
25	064	+076	+1,64	+2,50	+1,41	+4,31	+2,16	04,40	03,15	3,41	547	25
26	073	+069	+0,95	+1,47	+1,02	+1,27	+2,04	05,66	13,67	33,47	44618	26

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HAUPT-NIVEAUS:

Z	H	P	T	TF	PT	EPT	E	S	RF	+L	-L	+I-	L
01	3000	7150	+02,5	-00,3	3034	3146	04,43	04,04	61,8	01,5	////	1,43	08,5
02	2800	7881	+02,8	+00,8	3081	3138	04,95	04,84	66,1	01,8	////	1,43	03,1
03	2600	7466	+03,8	+00,8	3011	3185	04,99	04,17	68,8	01,9	////	1,43	03,3
04	2400	7655	+04,9	+01,5	3001	3114	05,09	04,14	58,6	28,0	////	1,43	03,4
05	2200	7840	+06,1	+02,1	2983	3101	05,03	04,00	55,4	08,0	////	1,43	03,4
06	2000	8048	+06,7	+04,8	2970	3090	05,21	04,10	54,9	01,8	////	1,43	03,0
07	1800	8247	+07,4	+03,3	2967	3075	05,39	04,08	51,6	01,7	////	1,43	03,0
08	1600	8453	+06,9	+05,9	2938	3108	08,73	06,45	87,7	01,0	00,5	1,80	01,5
09	1400	8664	+06,7	+05,7	2916	3078	08,59	06,19	87,4	00,8	00,5	1,47	01,3
10	1200	8881	+07,8	+06,8	2907	3074	09,84	06,50	86,6	00,6	00,5	1,84	01,8
11	1000	9108	+09,8	+07,9	2900	3075	09,87	06,78	84,8	00,8	00,6	1,80	01,8

Z	DH	TV	G+T	G+E	G+S	G+RF	G+PT	I	M	A	D	Z
01		+031	,	,	,	,	,	08,73	01,74	,		01
02		+038	+0,81	-0,82	-0,13	-3,00	+0,84	08,90	01,10	6,90	6194	02
03		+045	+0,50	-0,08	+0,03	+1,94	+0,54	08,49	00,93	60,41	68708	03
04		+058	+0,55	-0,05	+0,01	+1,77	+0,46	08,48	00,86	810,38	00	04
05		+067	+0,60	+0,03	+0,07	+8,65	+0,48	08,38	00,86	1880,30	00	05
06		+074	+0,30	+0,18	+0,09	-0,78	+0,74	08,31	01,06	29,90	40315	06
07		+083	+0,45	+0,00	+0,08	+1,65	+0,67	08,30	01,10	1487,03	00	07
08		+080	-0,38	-1,67	-1,19	-8,08	+1,41	04,08	06,08	1,83	1494	08
09		+077	+0,10	+0,07	+0,13	+0,18	+1,14	05,70	10,10	64,15	51280	09
10		+090	+0,60	+0,33	+0,15	+0,40	+0,41	07,50	16,81	110,85	00	10
11		+103	+0,65	+0,38	+0,14	+0,92	+0,35	09,88	13,87	788,78	00	11

HP-TEMPERATUR:

Z	H	P	T	TF	PT	EPT	E	S	RF	+L	-L	+I-	L
16	8199	7840	+06,1	+02,1	2993	3101	06,03	04,00	83,4	08,0	////	1,43	03,4
17	8146	7900	+06,0	+02,4	2986	3100	05,38	04,88	81,5	01,8	////	1,43	03,1
18	1999	8048	+06,7	+02,8	2978	3090	05,39	04,18	54,9	01,8	////	1,43	03,0
19	1799	8247	+07,6	+03,3	2967	3078	05,39	04,08	51,6	01,7	////	1,43	03,0
20	1699	8350	+07,9	+03,7	2950	3071	05,64	04,01	58,9	01,6	////	1,43	08,7
21	1651	8399	+07,9	+03,9	2954	3089	06,08	04,35	84,9	01,8	////	1,43	08,8
22	1636	8415	+07,8	+04,8	2988	3074	06,84	04,63	88,9	00,9	////	1,43	01,6
23	1611	8441	+07,1	+04,7	2948	3088	07,80	06,38	71,2	00,9	////	1,43	01,6
24	1593	8453	+06,9	+05,9	2938	3108	08,73	06,48	87,7	01,0	00,5	1,80	01,5
25	1530	8516	+06,6	+05,8	2987	3084	08,17	05,99	84,9	00,9	00,5	1,80	01,5

Z	DH	TV	G+T	G+E	G+S	G+RF	G+PT	I	M	A	D	Z
16		+067	,	,	,	,	,	08,38	00,86	,		16
17	083	+067	-0,19	-0,66	-0,47	-7,73	+1,86	08,38	01,04	3,14	3831	17
18	146	+074	+0,48	-0,01	+3,04	+1,74	+0,59	08,37	01,06	5349,88	00	18
19	800	+083	+0,45	+0,00	+0,08	+1,65	+0,87	08,48	01,13	409,45	00	19
20	100	+086	+0,30	+0,28	-0,13	-1,87	+0,72	03,38	01,08	8,61	6788	20
21	047	+084	+0,00	-0,44	+0,80	-4,17	+1,04	03,61	08,99	1,08	1080	21
22	015	+085	-0,65	+6,84	+1,03	-6,40	+1,78	03,08	08,44	0,18	118	22
23	084	+080	+8,81	-3,84	-8,79	-9,70	+3,99	03,99	05,80	818,30	00	23
24	011	+080	+1,74	-3,31	-9,80	-8,33	+8,07	04,16	06,18	8,64	1878	24
25	041	+074	+0,81	+0,90	+0,74	+4,48	+1,09	04,67	07,86	41,36	39180	25

HP-FEUCHTIGKEIT:

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HAUPT-NIVEAUS:

Z	H	P	T	TF	PT	EPT	E	S	RF	+L	-L	+I-	L
01	3000	7145	[illegible]	+00,0	3032	3148	[illegible]	[illegible]	[illegible]	[illegible]	////	1,10	03,5
02	2800	7327	[illegible]	+00,1	3014	3137	[illegible]	[illegible]	[illegible]	[illegible]	////	1,10	03,9
03	2600	7456	[illegible]	[illegible]	[illegible]	3137	[illegible]	[illegible]	[illegible]	[illegible]	////	1,10	[illegible]
04	2400	7747	[illegible]	+01,3	[illegible]	3111	[illegible]	[illegible]	[illegible]	[illegible]	////	[illegible]	[illegible]
05	2200	7441	+05,3	[illegible]	[illegible]	3101	05,34	[illegible]	[illegible]	[illegible]	////	[illegible]	[illegible]
06	2000	8040	+07,3	+02,7	[illegible]	3047	[illegible]	[illegible]	[illegible]	[illegible]	////	[illegible]	[illegible]
07	1800	8245	+07,3	+03,4	[illegible]	3075	[illegible]	[illegible]	[illegible]	[illegible]	////	[illegible]	03,1
08	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
09	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
10	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
11	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Z	DH	TV	G+T	G+E	G+S	G+RF	G+PT	I	M	A	D	Z
01		[illegible]	,	,	,	,	,	[illegible]	[illegible]	,		01
02		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	02
03		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	03
04		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	04
05		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	05
06		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	06
07		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	07
08		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	08
09		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	09
10		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	10
11		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	11

HP-TEMPERATUR:

Z	H	P	T	TF	PT	EPT	E	S	RF	+L	-L	+I-	L
16	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
17	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
18	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
19	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
20	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
21	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
22	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
23	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
24	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Z	DH	TV	G+T	G+E	G+S	G+RF	G+PT	I	M	A	D	Z
16		[illegible]	,	,	,	,	,	[illegible]	[illegible]	,		16
17	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	17
18	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	18
19	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	19
20	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	20
21	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	21
22	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	22
23	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	23
24	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	24

HP-FEUCHTIGKEIT:

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Z	H	P	T	TF	PT	EPT	E	S	RF	+L	-L	+I-	L
25	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	////	[illegible]	[illegible]
26	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	////	[illegible]	[illegible]
27	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	////	[illegible]	[illegible]
28	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Z	DH	TV	G+T	G+E	G+S	G+RF	G+PT	I	M	A	D	Z
25		[illegible]	,	,	,	,	,	[illegible]	[illegible]	,		[illegible]
26	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
27	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
28	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Example C_2 14 Oct. 1970

Z-0745 14.10.1970 13.00 UHR (4)

HAUPT-NIVEAUS

[illegible]

MP-TEMPERATUR

[illegible]

MP-FEUCHTIGKEIT

[illegible]

Z-0745 14.10.1970 15.00 UHR (6)

HAUPT-NIVEAUS

[illegible]

MP-TEMPERATUR

[illegible]

MP-FEUCHTIGKEIT

[illegible]

Z-0724 14.10.1970 14.00 UHR (5)

HAUPT-NIVEAUS

Z	H	P	T	TP	PT	EPT	E	S	RF	+L	-L	+I-	L
01	3000	7140	+02,8	+02,6	3032	3136	04,30	03,75	58,8	01,9	//,/	1,89	03,5
02	2800	7272	+78,8	+00,0	3023	3135	04,76	04,08	63,7	02,1	//,/	1,89	03,8
03	2600	7457	+03,6	+00,7	3018	3124	04,90	04,09	61,0	08,1	//,/	1,89	03,6
04	2400	7646	+04,9	+01,7	3008	3119	05,09	04,31	61,0	08,1	//,/	1,89	03,8
05	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	04,81	57,3	08,1	//,/	1,89	03,7
06	2000	8036	+06,6	+03,8	2960	3100	05,77	04,48	58,3	01,7	//,/	1,89	03,1
07	1800	8437	+07,4	+03,9	2965	3090	06,17	04,67	59,8	01,5	//,/	1,89	08,6
08	1600	8446	+08,6	+05,9	2938	3109	08,30	06,58	91,2	00,5	00,3	1,53	00,8
09	1400	8657	+07,8	+06,7	2988	3101	09,19	06,63	87,7	00,7	00,6	1,86	01,3
10	1200	8874	+09,9	+07,5	2918	3093	09,55	06,78	83,7	00,7	00,6	1,81	01,4
11	1000	9004	+10,1	+08,1	2910	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Z	UH	TV	G-T	G-E	G-S	G-HP	G-PT	I	N	A	L	Z
01		+088	,	,	,	,	,	03,01	03,67	,		01
02		+034	+0,41	-0,38	-0,23	+3,38	+0,64	03,03	03,75	89,96	3326A	02
03		+044	+0,50	-0,07	-0,01	+1,33	+0,54	03,21	00,76	3181,93	00	03
04		+056	+0,55	-0,80	-0,11	+0,01	+0,48	03,36	03,89	6714,31	00	04
05		+065	+0,45	-0,00	+0,08	+1,84	+0,58	03,54	03,69	847,91	00	05
06		+075	+0,90	-0,84	-0,14	+0,82	+0,53	03,75	01,34	11,80	11436	06
07		+088	+0,30	-0,80	-0,10	+0,75	+0,73	03,99	01,90	83,18	8310A	07

MP-TEMPERATUR

[illegible]

MP-FEUCHTIGKEIT

Z-0737 14.10.1970 16.30 UHR (8)

HAUPT-NIVEAUS

Z	H	P	T	TP	PT	EPT	E	S	RF	+L	-L	+I-	L
01	3000	7140	+01,5	+01,2	3324	3187	04,84	03,78	61,5	01,5	//,/	1,64	03,0
02	2800	7871	+02,3	+00,9	3017	3140	05,19	04,45	71,9	01,8	//,/	1,64	03,0
03	2600	7455	+03,4	+01,1	3036	3133	05,48	04,59	70,2	01,9	//,/	1,64	03,0
04	2400	7643	+04,6	+01,9	2999	3124	05,66	04,60	64,4	01,6	//,/	1,64	08,2
05	2200	7635	+05,7	+02,7	2990	3116	05,86	04,67	64,0	01,7	//,/	1,64	08,7
06	2000	8031	+06,4	+03,7	2976	3118	06,33	05,07	67,8	01,4	//,/	1,64	08,2
07	1800	8831	+06,1	+05,5	2958	3188	08,71	06,61	95,4	00,7	//,/	1,64	01,1
08	1600	8437	+06,3	+05,9	2934	3111	09,31	06,71	94,9	00,4	00,8	1,67	00,7
09	1400	8648	+07,7	+07,1	2986	3118	09,75	07,04	98,7	00,7	00,8	1,41	01,8
10	1200	8863	+08,9	+07,9	2980	3104	10,07	07,10	88,2	00,8	00,8	1,50	01,3
11	1000	9088	+10,8	+08,9	2913	3101	10,68	07,33	85,3	00,7	00,3	4,14	01,1

Z	UH	TV	G-T	G-E	G-S	G-HP	G-PT	I	N	A	D	Z
01		+081	,	,	,	,	,	03,33	03,83	,		01
02		+020	+0,83	-0,48	+0,51	-7,14	+0,48	03,33	03,24	1172,47	00	02
03		+041	+0,35	-0,15	+0,07	[illegible]	[illegible]	03,37	02,64	[illegible]	00	03
04		+053	+0,60	-0,08	+0,01	+1,90	+0,38	03,44	00,26	50,57	50861	04
05		+065	+0,35	-0,11	+0,03	+1,82	+0,47	03,54	00,30	[illegible]	2335	05
06		+078	+0,35	-0,33	-0,60	-1,95	+0,66	03,67	03,45	[illegible]	4060	06
07		+078	-0,15	-1,02	-0,77	-8,33	[illegible]	03,83	01,70	[illegible]	83	07

[illegible]

MP-TEMPERATUR

[illegible]

MP-FEUCHTIGKEIT

[illegible]

Example E_1 17 Oct. 1970

Z=0804 17.10.1970 08.30 UHR (1)

HAUPT-NIVEAUS:

Z	H	P	T	TT	PT	EPT	E	S	HF	+L	-L	+I-	L
01	3000	7180	+02,?	[illegible]	3034	3199	06,77	05,94	94,5	02,4	////	2,00	03,6
02	2800	7230	+03,4	+02,6	3038	3202	07,19	06,19	92,1	02,6	////	2,00	04,0
03	2600	7434	+03,9	+0?,2	3016	3184	07,34	06,17	90,9	02,5	////	2,00	03,9
04	2400	7681	+04,6	+03,4	3004	3162	07,09	05,61	82,4	02,4	////	2,00	03,6
05	2200	7813	+05,2	+03,?	2987	3144	07,30	05,63	82,4	02,4	////	2,00	03,6
06	2000	8009	+05,3	+03,6	2967	3118	07,23	05,63	81,0	02,3	////	2,00	03,8
07	1800	8210	+05,4	+03,8	2947	3092	07,15	05,44	7?,7	02,3	////	2,00	03,8
08	1600	8417	+04,9	+03,1	2921	3081	06,63	04,91	76,5	02,0	00,6	2,46	02,8
09	~~1400~~	8629	+03,2	+02,7	2884	3018	07,08	05,18	91,4	01,7	01,2	1,43	02,9
10	1200	8847	+02,6	+02,0	2858	2979	06,58	04,65	88,1	01,4	00,6	2,37	02,0
11	1000	9038	+01,2	+01,6	2881	2940	06,66	04,58	10,0	01,2	00,6	2,07	01,9

Z	DH	TV	G-T	G-E	G-S	G-HF	G-PT	I	N	A	D	Z
01		+038	,	,	,	,	,	00,85	00,00	,		01
02		+044	+0,24	+0,29	+0,17	+1,67	+0,17	02,24	00,15	1,46	1648	02
03		+049	+0,28	+0,08	+0,01	+0,61	+0,21	01,97	00,14	174,00	00	03
04		+057	+0,45	+0,13	+0,16	+4,26	+0,56	01,74	00,14	492,81	00	04
05		+061	+0,80	+0,10	+0,01	+0,03	+0,88	01,83	00,12	11,13	11640	05
06		+068	+0,02	+0,02	+0,10	+0,49	+1,00	01,36	00,11	15,88	15601	06
07		+083	+0,02	+0,02	+0,10	+0,70	+1,00	01,21	00,10	84,68	84419	07
08		+087	-0,82	+0,28	+0,26	+1,99	+1,30	03,30	00,43	0,17	144	08
09		+041	-0,80	-0,22	+0,10	+7,46	+1,87	06,41	00,48	2,00	4718	09
10		+035	-0,85	-0,24	+0,04	+1,68	+1,29	07,55	01,09	8,04	1871	10
11		+019	-0,80	-0,04	+0,03	+5,98	+1,85	09,70	00,69	36,38	38288	11

NP-TEMPERATUR:

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Z=0806 17.10.1970 10.48 UHR (3)

HAUPT-NIVEAUS:

Z	H	P	T	TT	PT	EPT	E	S	HF	+L	-L	+I-	L
01	3000	7100	+02,7	-04,8	3048	3048	00,23	00,20	03,0	02,4	////	1,48	04,1
02	2800	7231	+03,6	-04,7	3035	3040	00,19	00,16	02,3	02,6	////	1,48	04,5
03	2600	7415	+03,9	-04,1	3018	3027	00,41	00,34	04,2	02,4	////	1,48	04,1
04	2400	7604	+04,7	-03,8	3005	3008	00,17	00,14	01,8	02,3	////	1,4?	04,0
05	2200	7797	+04,9	-03,1	2985	2998	00,59	00,47	06,4	02,3	////	1,4?	03,9
06	2000	7994	+05,3	-02,?	2969	2992	00,64	00,50	06,6	02,4	////	1,48	04,1
07	1800	8197	+05,4	-02,6	2946	2976	01,35	01,03	14,3	02,3	////	1,48	04,0
08	1600	8405	+04,6	-01,7	2921	2954	01,69	01,28	18,7	02,0	01,2	1,35	03,5
09	1409	8618	+04,1	-00,6	2893	2946	02,92	02,11	34,2	01,4	01,1	1,28	02,5
10	1200	8838	+02,9	+00,1	2860	2943	04,58	03,16	54,9	01,4	00,6	2,10	02,1
11	1000	9064	+00,1	+00,7	2810	2905	05,89	03,64	82,0	00,2	00,9	0,96	00,5

Z	DH	TV	G-T	G-E	G-S	G-HF	G-PT	I	N	A	D	Z
01		+027	,	,	,	,	,	02,53	00,03	,		01
02		+038	+0,25	+0,03	+0,03	+0,47	+0,49	02,26	00,64	9,27	10367	02
03		+039	+0,20	-0,11	-0,09	-1,24	+0,67	02,08	00,66	382,08	00	03
04		+047	+0,40	+0,18	+0,10	+1,49	+0,65	01,88	00,62	601,98	00	04
05		+049	+0,10	-0,21	-0,17	-2,30	+0,87	01,65	00,61	348,48	00	05
06		+053	+0,20	-0,03	-0,02	-0,81	+0,69	01,91	00,51	31,03	28808	06
07		+055	+0,05	-0,35	-0,26	-3,78	+1,01	01,39	00,50	925,79	00	07
08		+030	-0,30	+0,19	+0,11	-2,91	+1,37	03,08	01,35	1,51	1467	08
09		+044	+0,35	+0,60	+0,43	-7,61	+1,41	04,76	03,76	4,00	3786	09
10		+034	+0,60	-0,80	-0,54	-8,85	+1,64	06,80	06,84	87,77	85336	10
11		+037	-1,41	-0,39	-0,63	-2,98	+9,40	08,85	84,48	6,73	8891	11

NP-TEMPERATUR:

Z	H	P	T	TT	PT	EPT	E	S	HF	+L	-L	+I-	L
16	1800	8197	+05,4	-01,8	2948	2976	01,35	01,03	14,3	02,3	////	1,48	04,0
17	1660	8348	+05,4	-01,7	2934	2961	01,38	01,03	14,6	02,3	////	1,48	03,9
18	1600	8405	+04,6	-01,7	2921	2954	01,69	01,28	18,7	02,0	01,2	1,35	03,5
19	1434	8580	+04,5	-00,9	2903	2983	02,41	01,90	29,4	01,5	01,0	1,51	02,6
20	1401	8618	+04,1	-00,8	2893	2946	02,92	02,11	34,2	01,4	01,1	1,28	02,5
21	1386	8699	+03,4	+03,1	2878	2934	04,04	02,90	52,1	01,7	01,1	1,46	02,6
22	1201	8838	+02,9	+00,1	2860	2943	04,52	03,16	54,9	01,4	00,6	2,10	02,1
23	1145	8901	+02,7	+03,1	2658	2936	04,68	03,64	62,0	01,0	00,6	1,65	01,7
24	1101	8950	+00,1	-00,2	2841	2925	04,65	03,64	64,0	00,2	00,6	1,88	00,4
25	1038	8999	+00,4	-00,2	2819	2913	05,28	03,61	68,6	00,2	00,2	0,98	00,4
26	1008	9064	+00,1	-00,7	2810	2905	05,89	03,64	82,6	00,2	00,9	0,96	00,5

Z	DH	TV	G-T	G-E	G-S	G-HF	G-PT	I	N	A	D	Z
16		+055	,	,	,	,	,	01,39	00,50	,		16
17	140	+055	+0,00	+0,08	-0,00	-0,83	+1,08	06,37	00,96	1,47	1436	17
18	060	+050	+1,00	-0,51	-0,36	-6,68	+5,10	03,08	01,35	1,61	1552	18
19	145	+046	-0,01	-0,07	-0,45	-7,51	+1,24	04,35	03,34	8,78	8447	19
20	033	+044	-0,74	-0,50	-0,40	-8,60	+1,88	04,76	03,76	35,47	33838	20
21	074	+036	-0,54	-1,81	-1,06	-1,39	+8,02	05,47	03,46	140,80	00	21
22	125	+034	-0,40	-0,38	-0,83	-7,61	+1,45	06,50	06,84	8,13	7438	22
23	056	+038	-0,36	-0,19	-0,09	-4,08	+1,43	07,03	10,84	6,13	7338	23
24	043	+086	-1,38	-0,06	+0,01	-4,05	+8,46	07,37	98,39	0,53	476	24
25	048	+010	-3,96	-1,33	-0,88	-3,84	+5,14	07,61	36,32	100,66	91051	25
26	056	+037	-0,83	+0,18	+0,04	-8,61	+1,57	08,85	84,45	76,61	67974	26

NP-FEUCHTIGKEIT:

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Z	H	P	T	TT	PT	EPT	E	S	HF	+L	-L	+I-	L
27	1404	8618	+04,1	-00,8	2893	2946	02,92	02,11	34,2	01,4	01,1	1,28	02,5
28	1373	8651	+03,7	-00,5	2886	2951	03,46	02,49	41,8	01,7	01,1	1,48	02,9
29	1204	8834	+02,9	+00,1	2860	2943	04,58	03,16	54,9	01,4	00,6	2,10	02,1

Z	DH	TV	G-T	G-E	G-S	G-HF	G-PT	I	N	A	D	Z
27		+044	,	,	,	,	,	04,76	03,76	,		27
28	030	+041	+1,34	+1,76	-1,24	-4,99	+2,41	05,04	03,64	3,33	3131	28
29	169	+034	+0,47	+0,62	-0,41	-0,46	+1,63	06,50	06,84	9,71	8904	29

Z=0805 17.10.1970 [illegible].37 UHR (2)

HAUPT-NIVEAUS:

Z	H	P	T	TT	PT	EPT	E	S	HF	+L	-L	+I-	L
01	3000	7100	+02,?	//////	3037	3190	04,??	05,53	87,8	02,4	////	1,50	04,0
02	2800	7231	+02,9	//////	3029	3170	05,45	05,13	79,0	02,7	////	1,50	04,4
03	2600	7416	+03,9	//////	3018	3143	05,44	04,57	87,2	02,6	////	1,50	04,3
04	2400	7605	+04,4	//////	3001	3116	05,15	04,28	81,5	02,4	////	1,50	04,0
05	2200	7798	+04,9	-03,0	2985	3000	00,66	00,54	07,4	02,3	////	1,50	03,9
06	2000	7996	+05,3	-02,2	2964	2982	01,12	00,27	11,9	02,4	////	1,50	04,0
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
08	1600	8406	+05,5	-01,2	2960	2964	01,80	01,33	18,9	02,3	01,5	1,48	03,9
09	1400	8619	+04,2	-00,3	2894	2958	03,39	02,45	39,4	01,4	01,2	1,47	03,1
10	1200	8838	+03,3	+00,4	2864	2948	04,59	03,24	59,3	01,5	01,3	1,50	02,6
11	1000	9044	+02,2	+00,1	2838	2919	04,89	03,37	68,3	01,3	00,2	1,54	02,2

Z	DH	TV	G-T	G-E	G-S	G-HF	G-PT	I	N	A	D	Z
01		+031	,	,	,	,	,	02,45	00,42	,		01
02		+037	+0,46	+0,24	-0,27	+0,11	+0,56	02,24	00,30	2,92	325?	02
03		+048	+0,50	+0,25	+0,24	+3,45	+0,54	01,97	00,28	132,82	00	03
04		+051	+0,25	+0,14	+0,17	+2,26	+0,58	01,74	00,29	4713,24	00	04
05		+049	+0,25	+2,24	+1,24	+7,09	+0,20	01,53	00,26	46,36	48508	05
06		+054	+0,20	-0,62	-0,14	-2,22	+0,25	01,32	00,22	16,16	12450	06
07		+056	+0,05	-0,42	-0,31	-4,37	+1,00	01,21	00,20	60,35	60818	07
08		+057	+0,05	+0,07	+0,07	+0,25	+1,00	03,30	00,57	0,55	535	08
09		+046	-0,65	-0,80	-0,56	-0,31	+1,73	05,41	01,45	2,00	1893	09
10		+036	-0,45	-0,60	-0,40	-9,95	+1,81	07,55	02,60	10,03	9828	10
11		+027	-0,55	-0,15	-0,06	-4,58	+1,80	09,70	04,51	26,16	23395	11

NP-TEMPERATUR:

Z	H	P	T	TT	PT	EPT	E	S	HF	+L	-L	+I-	L
16	1800	8198	+05,4	-01,2	2940	2988	01,95	01,46	86,6	02,4	////	1,50	04,0
17	1600	8408	+05,5	-01,2	2920	2964	01,40	01,33	18,9	02,3	01,5	1,48	03,9
18	1513	8498	+04,6	-00,6	2910	2962	02,64	01,96	30,2	02,0	01,4	1,39	03,4
19	1401	8619	+04,2	-00,3	2894	2956	03,34	02,45	39,4	01,5	01,2	1,47	03,1
20	~~1385~~	8701	+03,4	+00,4	2878	2946	03,72	02,66	46,1	01,1	01,0	1,63	02,7
21	~~1308~~	8638	+03,3	+00,4	2864	2946	04,59	03,24	59,3	01,5	01,0	1,50	02,6
22	1093	8940	+03,5	+00,3	2858	2933	04,35	03,08	5?,3	01,4	00,9	1,46	02,3
23	0999	9067	+02,6	+00,2	2836	2921	04,76	03,27	64,5	01,3	00,9	1,50	02,2

Z	DH	TV	G-T	G-E	G-S	G-HF	G-PT	I	N	A	D	Z
16		+056	,	,	,	,	,	01,81	00,80	,		16
17	800	+057	+0,05	+0,07	+0,07	+0,25	+1,00	03,30	00,57	0,55	535	17
18	088	+049	-1,06	-1,01	-0,79	-3,01	+2,13	04,25	00,75	1,03	986	18
19	112	+046	-0,36	-0,63	-0,43	-2,24	+1,41	05,41	01,45	4,07	3888	19
20	075	+038	-1,04	-0,66	-0,26	-6,98	+2,19	06,26	02,06	3,66	3396	20
21	183	+038	-0,06	-0,70	-0,46	-0,99	+1,71	07,55	02,69	87,33	83080	21
22	108	+040	+0,18	+0,03	+0,20	+3,44	+0,84	08,73	03,64	15,00	13519	22
23	094	+031	-0,94	-0,44	-0,86	-9,84	+1,01	09,81	04,51	78,38	64086	23

NP-FEUCHTIGKEIT:

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Z	H	P	T	TT	PT	EPT	E	S	HF	+L	-L	+I-	L
24	1600	8406	+05,5	-01,2	2960	2964	01,80	01,33	18,9	02,3	01,5	1,48	03,9
25	1535	8475	+04,8	-00,9	2914	2962	02,47	01,82	27,4	02,0	01,4	1,41	03,6
26	1401	8619	+04,2	-00,3	2894	2958	03,39	02,45	39,4	01,2	01,2	1,47	03,1

Z	DH	TV	G-T	G-E	G-S	G-HF	G-PT	I	N	A	D	Z
24		+057	,	,	,	,	,	03,30	00,57	,		24
25	065	+051	-1,07	-1,03	-0,74	-3,06	+2,17	04,36	00,82	0,75	723	25
26	134	+046	-0,45	-0,69	-0,47	-8,96	+1,51	05,41	01,45	4,10	3661	26

Z=0807 17.10.1970 11.17 UHR (4)

HAUPT-NIVEAUS:

Z	H	P	T	TT	PT	EPT	E	S	HF	+L	-L	+I-	L
01	3000	7100	+02,3	+02,1	3040	3055	00,41	00,36	05,4	02,1	////	1,38	03,6
02	2800	7231	+03,7	+04,7	3033	3040	00,29	00,25	04,0	02,4	////	1,38	04,2
03	2600	7418	+03,7	+04,3	3016	3023	00,33	00,28	04,0	02,4	////	1,38	04,3
04	2400	7608	+04,1	-03,8	2999	3009	00,47	00,39	05,5	02,4	////	1,38	04,1
05	2200	7795	+04,6	-03,1	2985	2996	00,64	00,51	07,0	02,4	////	1,38	04,0
06	2000	7991	+05,3	-02,1	2960	2994	01,28	00,95	13,9	02,5	////	1,38	03,9
07	1800	8193	+05,7	-01,9	2958	2974	01,09	00,83	11,3	02,3	////	1,38	03,9
08	1600	8399	+05,7	-00,9	2931	2970	02,00	01,46	23,6	02,3	01,6	1,45	03,0
09	1400	8611	+04,8	+00,3	2901	2956	03,63	01,90	39,1	01,7	01,3	1,34	03,0
10	~~1800~~	8886	+02,9	+00,2	2861	2946	04,68	03,26	61,3	00,2	00,6	1,29	01,6
11	~~1300~~	9053	+00,9	+00,1	2880	2981	05,67	03,91	67,0	00,4	00,4	1,09	00,9

Z	DH	TV	G-T	G-E	G-S	G-HF	G-PT	I	N	A	D	Z
01		+085	,	,	,	,	,	03,51	00,90	,		01
02		+033	+0,35	+0,06	+0,07	+1,46	+0,42	02,97	00,65	4,53	5061	02
03		+037	+0,00	+0,02	-0,02	-0,22	+0,26	02,07	00,55	49,33	48317	03
04		+041	+0,23	+0,07	+0,05	+0,73	+0,64	01,91	00,58	147,74	00	04
05		+048	+0,35	+0,08	+0,04	+0,79	+0,69	01,77	00,50	132,08	00	05
06		+054	+0,25	+0,49	-0,30	-8,94	+0,74	01,67	00,43	41,05	41976	06
07		+038	+0,60	+0,06	+0,06	+0,80	+0,84	01,46	00,45	39,03	34993	07
08		+039	+0,00	+0,45	-0,33	-4,49	+1,05	02,86	00,50	3,48	3677	08
09		+051	-0,45	-0,31	-0,81	-4,86	+1,51	04,16	02,04	3,34	3174	09
10		+034	-0,96	-1,02	-0,66	-6,81	+4,03	05,47	08,19	2,91	3401	10
11		+015	-1,00	-0,83	-0,32	-6,64	+2,06	06,80	35,75	21,99	19834	11

NP-TEMPERATUR:

Z	H	P	T	TT	PT	EPT	E	S	HF	+L	-L	+I-	L
16	1793	8193	+05,7	-01,9	2958	2974	01,09	00,83	11,3	02,3	////	1,38	03,9
17	1687	8249	+05,6	-01,3	2937	2960	01,56	01,16	15,9	02,4	////	1,38	03,8
18	1599	8399	+05,7	-00,9	2931	2970	02,00	01,46	21,8	02,3	01,6	1,45	03,0
19	1505	8495	+05,2	-01,2	2918	2953	01,53	01,41	20,7	02,2	01,4	1,53	03,6
20	1399	8611	+04,8	+00,3	2901	2951	03,63	01,92	39,1	01,7	01,3	1,34	03,0
21	1385	8498	+03,6	+00,4	2881	2966	04,45	03,19	56,3	01,5	01,0	1,46	02,6
22	1268	8760	+03,5	+00,7	2873	2963	04,20	03,42	61,1	01,1	00,8	1,31	01,9
23	1227	8799	+03,1	+00,5	2865	2955	04,62	03,41	63,1	01,0	00,7	1,39	01,7
24	1201	8888	+02,9	+00,2	2861	2946	04,62	03,26	61,3	01,2	00,6	1,39	01,6
25	1137	8899	+01,5	+00,1	2842	2937	05,33	03,73	78,2	00,5	00,4	1,31	00,9
26	1098	8950	+01,0	+00,0	2830	2930	05,54	03,84	83,9	00,4	00,3	1,26	00,8

Z	DH	TV	G-T	G-E	G-S	G-HF	G-PT	I	N	A	D	Z
16		+058	,	,	,	,	,	01,28	00,32	,		16
17	131	+060	+0,07	-0,31	-0,28	-3,07	+0,44	02,41	00,72	5,96	5825	17
18	088	+059	+0,81	-0,92	-0,67	-7,74	+1,28	02,73	00,89	2,06	1966	18
19	094	+054	+0,53	+0,07	+0,07	+0,08	+1,62	03,51	01,92	3,40	3241	19
20	105	+051	+0,34	-0,24	-0,26	-7,27	+1,43	04,22	02,27	3,58	3382	20
21	074	+041	-1,60	-0,43	-1,79	-1,14	+2,70	04,68	03,46	3,05	4893	21
22	068	+040	+0,16	+0,57	-0,37	-7,23	+1,32	05,27	05,41	2,05	1988	22
23	039	+036	-1,12	-0,05	+0,01	-5,59	+2,25	05,33	05,42	8,02	7581	23
24	086	+034	+0,76	+0,76	+0,36	+2,73	+1,48	05,47	04,19	6,95	6830	24
25	063	+021	+0,80	-1,11	-0,74	-8,55	+3,31	05,94	31,83	2,87	2545	25
26	045	+016	-1,11	-0,46	-0,24	-9,77	+2,17	08,20	84,14	31,54	28164	26

NP-FEUCHTIGKEIT:

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Example E_2 17 Oct. 1970

Z-0830 17.10.1970 13.00 UHR (5)

HAUPT-NIVEAUS

Z	H	P	T	TP	PT	FPT	X	S	HP	+L	+L	+I+	L
01	3000	7100	+03,7	-04,6	3053	3087	10,54	00,51	07,6	02,4	////	1,37	04,1
02	2800	7233	[illegible]	-03,4	3044	3058	00,66	00,57	07,7	02,4	////	1,37	04,8
03	2600	7414	+04,7	-03,8	3087	3045	00,40	00,47	08,9	02,4	////	1,37	04,8
04	2400	7602	+05,1	-02,9	3009	3027	00,77	00,43	08,3	02,4	////	1,37	04,8
05	[illegible]												
06	2000	7991	+05,8	-01,8	2974	3000	01,84	00,97	10,7	03,3	////	1,37	04,1
07	1800	8193	+06,8	-00,9	2957	2996	01,82	01,34	14,0	08,8	////	1,37	03,9
08	1600	8399	+05,9	+00,1	2933	2961	08,03	04,17	31,5	08,1	01,5	1,39	03,6
09	1400	8611	+05,0	+01,4	2906	2972	04,54	03,64	50,9	01,4	01,0	1,38	08,4
10	1800	8829	+03,9	+02,0	2671	2941	05,95	04,40	73,6	00,7	00,5	1,31	01,3
11	1000	9053	+03,7	+02,1	2844	2996	06,15	04,44	77,8	00,7	00,5	1,30	01,9

Z	DH	TV	G-T	G-E	G-S	G-HP	G-PT	I	V	A	D	Z
01		+037	,	,	,	,	,	08,44	08,84	,		01
02		+042	+0,24	-0,36	-0,34	-0,50	+0,74	-02,24	01,99	130,59	00	02
03		+048	+0,22	+0,07	+0,35	-0,37	+0,78	-08,06	01,82	409,01	00	03
04		+052	+0,70	+0,01	+0,02	+0,30	+0,88	-01,90	01,73	1049,79	00	04
05		+058	+0,50	[illegible]	+0,36	-0,33	+0,88	-01,77	01,81	516,15	00	05
06		+090	+0,15	[illegible]	+0,15	-1,98	+0,93	-01,67	01,70	(0,00)	00	06
07		+064	+0,20	[illegible]	+0,21	-9,40	+0,84	-01,50	01,70	912,52	00	07
08		+062	+0,13	[illegible]	+0,43	-4,75	+1,21	-08,49	04,40	14,10	13773	08
09	[illegible]											
10	[illegible]											
11	[illegible]											

NF-TEMPERATUR

Z-0804 17.10.1970 13.45 UHR (6)

HAUPT-NIVEAUS

Z	H	P	T	TP	PT	FPT	X	S	HP	+L	+L	+I+	L
01	3000	7110	+03,4	-04,3	3053	3084	03,45	03,33	05,3	[illegible]	////	1,38	04,3
02	2800	7263	+03,9	-03,4	3034	3056	03,75	03,45	[illegible]	[illegible]	////	1,38	04,2
03	2600	7424	+04,8	-03,3	3027	3042	03,64	03,55	07,8	08,3	////	1,38	04,1
04	2400	7608	+04,9	+03,1	3008	3032	03,67	03,56	07,9	04,3	////	1,38	03,9
05	2200	7800	+05,3	-02,5	2959	3010	06,43	06,74	09,9	04,4	////	1,38	03,8
06	2000	7978	+05,3	+01,6	2748	3030	01,50	01,17	16,0	02,4	////	1,33	03,8
07	1800	8191	+05,7	+00,8	2758	2774	02,06	01,58	01,1	08,1	////	1,38	03,6
08	1600	8408	+05,9	+00,1	2933	8990	08,43	03,17	31,5	08,1	01,4	1,45	03,5
09	1400	8613	+05,6	+01,4	2909	9498	04,38	03,16	47,3	01,5	01,0	1,43	03,5
10	1200	8929	+04,5	+02,3	2877	2948	05,43	04,18	73,3	00,7	00,6	1,25	01,3
11	[illegible]												

Z	DH	TV	G-T	G-R	G-S	G-HP	G-PT	I	N	A	D	Z
01		+036	,	,	,	,	,	08,49	01,85	,		01
02		+040	+0,07	+0,21	-0,14	-2,49	+1,01	-2,28	01,75	518,45	00	02
03		+048	+0,45	+0,05	+0,05	+0,65	-0,59	-0,06	01,74	5281,08	00	03
04		+080	+0,08	-0,01	+0,01	+0,13	+1,08	-01,90	01,70	[illegible]	[illegible]	04
05		+054	+0,80	-0,18	-0,09	-1,80	+0,45	-01,77	01,68	943,74	00	05
06		+055	+0,00	-0,24	-0,81	-0,04	+1,06	-01,77	01,69	498,65	00	06
07		+061	+0,30	-0,22	-0,81	-2,57	+0,73	01,57	01,70	2906,36	00	07
08	[illegible]											
09	[illegible]											
10	[illegible]											
11	[illegible]											

NF-TEMPERATUR

NF-FEUCHTIGKEIT

Z-0810 17.10.1970 14.07 UHR (7)

HAUPT-NIVEAUS

Z	H	P	T	TP	PT	FPT	X	S	HP	+L	+L	+I+	L
01	3000	7180	+03,8	-04,1	3052	3047	00,61	00,53	07,3	00,5	////	1,50	04,8
02	2800	7249	+03,9	+03,4	3037	3055	00,79	00,54	08,9	08,8	////	1,50	04,1
03	2600	7438	+04,A	-03,3	3031	3041	00,65	00,71	09,7	08,3	////	1,50	03,9
04	2400	7613	+04,3	+02,3	3009	3095	00,96	00,70	09,5	08,3	////	1,50	03,4
05	2200	7810	+05,1	+02,7	2994	3004	00,84	00,67	09,1	06,1	////	1,50	03,5
06	2000	8005	+05,1	+01,7	2965	3001	01,70	01,32	14,4	01,7	////	1,50	03,4
07	1800	8806	+05,3	+00,7	2946	3056	03,73	04,98	48,0	01,8	////	1,50	08,4
08	1600	8411	+05,8	+01,5	2985	3018	04,78	03,58	53,A	01,1	00,6	1,49	01,8
09	1400	6621	+04,8	+02,8	2894	3008	06,08	04,35	79,9	03,7	00,4	1,54	01,8
10	1200	8938	+03,1	+01,4	2968	2976	06,80	04,37	81,1	00,8	00,4	1,34	01,0
11	1000	9061	+03,2	+02,2	8840	2970	06,80	04,40	88,1	00,8	00,4	1,08	00,9

Z	DH	TV	G-T	G-X	G-S	G-HP	G-PT	I	V	A	D	Z
01		+036	,	,	,	,	,	08,61	01,33	,		01
02		+040	+0,07	-0,10	+0,04	+1,18	+1,01	08,49	01,44	1184,98	00	02
03		+045	+0,25	+0,05	-0,02	+0,39	+0,40	08,41	01,49	1105,80	00	03
04		+050	+0,85	-0,01	+0,02	+0,11	+0,40	08,36	01,53	3900,78	00	04
05		+052	+0,10	+0,01	+0,02	+0,17	+0,95	08,34	01,84	82,39	46184	05
06		+053	+0,00	+0,43	-0,33	-4,65	+1,05	08,35	08,55	35,08	35746	06
07		+058	+0,15	+1,31	+0,43	-8,90	+0,34	08,37	03,30	79,35	79053	07
08		+058	+0,05	+0,41	+0,47	-4,01	+1,00	08,47	37,44	18,08	11785	08
09	[illegible]											
10	[illegible]											
11	[illegible]											

NF-TEMPERATUR

NF-FEUCHTIGKEIT

NF-GLEITFAEHIGKEIT

Z-0811 17.10.1970 15.28 UHR (8)

HAUPT-NIVEAUS

Z	H	P	T	TP	PT	FPT	X	S	HP	+L	+L	+I+	L
01	3000	7110	+03,3	-04,1	3048	3044	00,49	00,74	10,6	08,3	////	1,53	03,9
02	2800	7440	+03,9	-03,8	3038	3058	00,79	00,65	09,6	08,2	////	1,53	03,7
03	2600	7484	+04,6	-03,8	3024	3044	00,44	00,71	09,5	08,3	////	1,53	03,4
04	2400	7610	+04,9	+02,7	3026	3049	01,55	00,48	11,5	08,8	////	1,53	03,7
05	2200	7604	+05,3	+02,1	2959	3017	01,31	01,54	13,3	08,3	////	1,53	03,4
06	2000	8001	+05,3	+02,1	2744	8993	01,81	02,94	18,9	01,1	////	1,53	01,9
07	1400	8403	+05,8	+00,8	2958	3310	03,18	08,45	34,2	01,5	////	1,53	02,5
08	1600	3AC9	+05,9	+01,1	8934	3310	03,24	08,98	40,4	01,3	00,8	1,68	08,1
09	1400	8681	+05,3	+02,1	8905	3310	05,50	03,88	61,1	03,9	00,5	1,49	01,5
10	1800	8839	+03,8	+08,0	8169	8979	06,00	04,88	74,6	00,7	00,4	1,48	01,1
11	1000	9063	+05,7	+01,9	8837	8954	08,53	04,48	57,3	00,5	00,4	1,34	05,9

Z	Uh	TV	G-T	G-E	G-S	G-LP	G-PT	I	V	A	D	Z
01		+034	,	,	,	,	,	08,75	01,48	,		01
02		+040	+0,48	+0,07	+0,37	+1,14	+0,43	08,08	01,53	234,81	00	02
03		+047	+0,35	-0,04	-0,33	-0,25	+0,10	08,61	01,44	716,74	00	03
04		+050	+0,15	-0,10	+0,06	+1,08	+0,41	02,44	01,56	423,47	00	04
05		+054	+0,27	-0,13	-0,02	-1,20	+0,45	02,74	01,40	1192,50	00	05
06		+054	+0,10	+0,05	+0,05	+0,57	+1,06	08,72	05,41	[illegible]	5745	06
07		+048	+0,35	-0,07	+0,73	-0,45	+0,79	02,49	03,20	[illegible]	33783	07
08		+064	+0,35	+0,38	-0,26	-4,17	+0,99	-04,53	05,29	39,77	34744	08
09	[illegible]											
10	[illegible]											
11	[illegible]											

NF-TEMPERATUR

NF-FEUCHTIGKEIT

Example F 30 Sept. 1970

Z-0784 30.09.1970 13,03 UHR

4

HAUPT-NIVEAUS:

Z	H	P	T	TP	PT	PPT	E	S	RF	+L	-L	+I-	L
01	3000	7130	+05,8	+01,8	3073	3184	06,49	03,93	43,6	01,5	////	1,30	02,6
02	2800	7258	+07,3	+02,0	3074	3141	06,51	03,88	46,1	01,6	////	1,40	[illegible]
03	2600	7484	+08,3	+02,7	3065	3172	06,67	03,98	42,6	01,6	////	1,80	03,5
04	2400	7601	+09,4	+03,3	3056	3160	06,77	03,83	43,6	01,6	////	1,50	03,7
05	2200	7760	+10,6	+04,1	3046	3153	06,64	03,85	37,5	01,7	////	1,80	01,7
06	2000	7967	+11,7	+05,3	3040	3156	05,53	04,33	40,2	01,6	////	1,40	03,5
07	1800	8155	+16,7	+06,0	3030	3147	05,73	04,39	39,0	01,7	////	1,40	03,8
08	1600	8347	+13,9	+06,6	3083	3136	05,71	04,87	00,4	01,7	00,4	8,16	03,6
09	1400	8544	+13,4	+06,8	3008	3165	06,50	06,81	53,0	01,0	00,5	1,64	01,5
10	1800	8744	+15,2	+09,7	4996	3161	06,85	06,36	51,8	00,8	00,4	1,78	01,6
11	1000	8950	+16,0	+11,2	4985	3169	10,17	07,10	55,9	00,1	00,5	1,08	01,3

Z	DH	TV	G-T	G-E	G-S	G-RF	G-PT	I	N	A	D	Z
01		+064	,	,	,	,	,	02,81	08,73	,		01
02		+079	+1,05	-0,01	+0,03	+3,81	+0,11	08,49	08,81	37,30	48067	02
03		+089	+0,86	-0,04	+0,02	+0,76	+0,44	08,81	01,89	249,63	00	03
04		+100	+0,55	-0,03	+0,04	+1,51	+0,42	01,96	01,71	115,35	00	04
05		+112	+0,60	-0,08	+0,08	+0,86	+0,30	01,74	01,42	71,46	76341	05
06		+124	+0,55	-0,34	+0,88	-1,17	+0,43	01,68	01,46	4816,74	00	06
07		+134	+0,50	-0,13	+0,03	+0,88	+0,46	01,39	01,80	56,16	57671	07
08		+146	+0,60	+0,01	+0,08	+1,83	+0,37	01,66	01,48	78,31	78648	08
09		+148	-0,08	+1,38	-0,97	-8,89	+1,05	01,86	04,37	44,86	3415	09
10		+163	+0,70	+0,19	-0,04	+1,31	+0,86	08,13	07,36	35,73	34496	10
11		+178	+0,60	+0,65	-0,38	-9,31	+0,85	08,48	07,81	3301,67	00	11

HP-TEMPERATUR:

Z	H	P	T	TP	PT	PPT	E	S	RF	+L	-L	+I-	L
16	1601	8347	+13,9	+06,6	3083	3136	05,71	04,87	35,3	01,7	00,8	8,16	03,7
17	1486	8450	+14,8	+06,3	3015	3164	07,68	06,65	47,8	01,3	00,6	1,77	03,6
18	1446	8499	+13,8	+05,7	3006	3168	06,38	06,16	53,1	01,0	00,5	1,66	01,5
19	1400	8544	+13,8	+05,8	3008	3165	06,50	06,81	53,0	01,0	00,5	1,64	01,5

Z	DH	TV	G-T	G-E	G-S	G-RD	G-PT	I	N	A	D	Z
16		+146	,	,	,	,	,	01,62	01,48	,		16
17	105	+151	+0,89	+1,83	+1,30	+0,63	+0,70	01,78	08,14	4,87	4886	17
18	049	+148	-0,60	-1,47	-1,09	+1,78	+1,84	01,81	05,84	0,67	654	18
19	045	+148	+0,00	-0,26	+0,12	+1,64	+0,99	01,87	04,37	345,90	00	19

HP-FEUCHTIGKEIT:

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Z	H	P	T	TP	PT	EPT	E	S	RF	+L	-L	+I-	L
80	1601	8347	+13,9	+06,6	3083	3136	05,71	04,87	36,9	01,7	00,8	8,16	08,6
81	1565	8388	+14,1	+06,6	3081	3136	05,83	04,34	36,8	01,7	00,6	1,93	03,5
82	1470	8475	+14,2	+07,7	3013	3186	06,68	05,08	49,3	01,1	00,6	1,77	01,7
83	1400	8544	+13,8	+06,8	3008	3165	06,50	06,81	53,0	01,0	00,5	1,64	01,5

Z	DH	TV	G-T	G-E	G-S	G-RF	G-PT	I	N	A	D	Z
80		+146	,	,	,	,	,	01,62	01,48	,		80
81	036	+148	+0,55	-0,33	-0,19	+0,75	+0,42	01,66	01,50	99,62	93870	81
82	095	+150	+0,10	-1,08	-2,75	-6,44	+0,83	01,77	03,83	1,39	1373	82
83	070	+146	-0,87	-8,34	-1,65	-6,39	+1,89	01,88	04,37	8,40	4312	83

Z-0785 30.09.1970 14,10 UHR

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HAUPT-NIVEAUS:

Z	H	P	T	TP	PT	PPT	E	S	RF	+L	-L	+I-	L
01	3000	[illegible]	+06,3	+00,9	3093	3180	03,99	03,[illegible]	41,7	01,7	////	1,35	08,5
02	2800	7210	+06,7	+01,4	3073	3179	04,48	03,[illegible]	45,0	01,6	////	1,43	06,7
03	2600	7368	+08,0	+02,4	3076	3171	04,60	03,83	46,1	01,7	////	1,34	02,6
04	2400	7550	+09,6	+03,5	3063	3171	04,80	03,77	40,1	01,6	////	1,93	08,4
05	2600	7730	+10,4	+04,7	3051	3174	05,72	04,53	44,5	01,4	////	1,98	08,1
06	2000	7903	+11,5	+05,5	3043	3167	05,69	04,44	40,3	01,3	////	1,46	09,0
07	1800	8107	+16,7	+05,7	3035	3151	05,64	04,34	39,3	01,4	////	1,40	03,8
08	1600	8299	+13,6	+07,0	3027	3158	06,40	04,76	39,4	01,4	00,5	8,63	01,9
09	1400	8493	+14,9	+09,5	3017	31[illegible]	07,[illegible]	06,54	56,3	00,9	00,5	1,88	01,5
10	1800	8693	+15,6	+10,1	3005	3174	09,20	06,61	51,6	00,8	00,4	1,41	01,[illegible]
11	1000	8898	+16,7	+11,5	4997	3169	10,61	07,36	55,8	00,7	00,5	1,51	01,8

Z	DH	TV	G-T	G-E	G-S	G-RF	G-PT	I	N	A	D	Z
01		+069	,	,	,	,	,	03,01	04,01	,		01
02		+073	+0,86	-0,11	+0,23	+2,35	+0,73	02,76	03,46	51,92	74255	02
03		+086	+0,65	-0,08	+0,03	+1,45	+0,32	01,54	03,40	37.8,65	00	03
04		+102	+0,80	-0,14	+0,07	+1,08	+0,18	02,38	03,55	6856,30	00	04
05		+111	+0,40	-0,41	-0,29	-2,31	+0,84	02,81	04,44	16,04	00	05
06		+123	+0,55	-0,13	-0,05	+0,60	+0,48	02,09	04,66	976,97	00	06
07		+134	+0,70	+0,18	+0,15	+4,49	+0,37	01,99	03,69	183,84	00	07
08		+146	+0,54	-0,32	-0,19	+0,71	+0,43	02,14	05,83	65,11	15491	08
09		+152	+0,50	-1,31	-0,71	+2,51	+0,47	02,31	06,99	30,48	34488	09
10		+167	+0,40	-0,15	+0,03	+0,47	+0,84	08,81	13,48	117,46	00	10
11		+180	+0,35	+0,45	-0,39	-1,69	+0,46	02,78	13,83	5034,43	00	11

HP-TEMPERATUR:

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Z	H	P	T	TP	PT	PPT	E	S	RF	+L	-L	+I-	L
16	8400	7598	+09,6	+03,5	3063	3171	04,40	03,76	40,1	01,6	////	1,99	08,4
17	8044	7698	+10,0	+04,8	3055	3164	05,14	04,16	41,6	01,5	////	1,48	08,3
18	8138	7794	+10,9	+05,5	3044	3165	06,35	05,04	40,3	01,8	////	1,98	01,9
19	2000	7980	+11,5	+05,5	3043	3167	05,49	04,44	43,3	01,3	////	1,98	08,0
80	1300	8107	+16,7	+05,9	3038	3151	05,64	04,34	38,3	01,4	////	1,98	08,8
81	1670	8230	+13,5	+06,7	3031	3154	06,11	04,63	39,4	01,4	////	1,98	08,1
82	1587	8339	+13,9	+07,1	3027	3153	06,35	04,77	39,3	01,3	00,5	8,80	01,9
83	1518	8379	+14,8	+06,7	3023	3164	08,20	06,11	50,6	01,1	00,9	8,06	01,6
84	1390	8403	+14,8	+09,5	3017	3169	08,90	06,54	52,4	00,9	00,5	1,60	01,6

Z	DH	TV	G-T	G-E	G-S	G-RF	G-PT	I	N	A	D	Z
16		+102	,	,	,	,	,	02,36	03,55	,		16
17	156	+110	+0,45	-0,44	-7,13	-0,56	+0,54	02,84	03,64	467,78	00	17
18	111	+115	+0,38	-1,09	-0,38	-7,40	+0,63	02,17	05,19	16,60	17697	18
19	101	+123	+0,61	+0,35	+0,24	+4,51	+0,37	02,09	04,66	485,75	00	19
20	200	+134	+0,40	-0,10	+0,15	+2,79	+0,38	01,99	03,69	183,84	00	20
21	169	+173	+0,44	-0,32	-0,23	-0,64	+0,35	02,09	04,17	147,79	00	21
22	082	+177	+0,75	-0,17	-0,18	-0,50	+0,40	02,14	05,30	2,47	25611	22
23	072	+152	+0,41	-0,55	-1,65	+4,79	+0,56	01,98	07,89	13,45	18633	23
24	115	+159	+0,51	+0,77	-0,37	+1,40	+0,66	02,38	06,02	78,38	93317	24

HP-FEUCHTIGKEIT:

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Z-0786 30.09.1970 15,30 UHR

6

HAUPT-NIVEAUS:

Z	H	P	T	TP	PT	PPT	E	S	RF	+L	-L	+I-	L
01	3000	7075	+05,9	+01,7	3081	3803	04,94	04,35	53,1	01,4	////	1,98	08,8
02	2800	7195	+06,9	+06,5	3073	3804	05,36	04,65	54,9	01,4	////	1,88	08,1
03	2600	7365	+07,6	+03,4	3084	3194	06,75	04,67	55,3	01,3	////	1,88	08,3
04	2400	7940	+08,6	+04,8	3094	3198	06,38	05,84	57,0	01,8	////	1,96	01,9
05	2200	7719	+09,7	+05,4	3082	3199	07,00	06,64	59,1	01,8	////	1,99	01,9
06	2000	7908	+10,7	+06,3	3538	3190	07,85	05,78	56,3	01,8	////	1,88	01,9
07	1800	8306	+11,4	+07,3	3048	3189	07,88	06,04	57,4	01,0	////	1,48	01,5
08	1600	8279	+18,5	+09,4	3018	3817	10,10	07,28	69,6	00,7	00,3	8,59	01,0
09	1400	8473	+13,7	+10,8	3038	3880	10,93	08,04	64,5	00,7	00,4	1,91	01,1
10	1800	8671	+14,6	+11,5	8922	3880	11,68	08,48	44,3	00,7	00,4	1,49	01,1
11	1000	8876	+15,9	+16,0	8948	3806	11,91	08,39	47,8	00,6	00,6	1,49	01,4

Z	DH	TV	G-T	G-E	G-S	G-RF	G-PT	I	N	A	D	Z
01		+069	,	,	,	,	,	03,89	01,82	,		01
02		+073	+0,49	-0,30	-0,21	+1,87	+0,54	03,11	01,83	2157,98	00	02
03		+084	+0,51	-0,60	-0,11	+0,03	+0,44	03,01	01,68	1434,69	00	03
04		+095	+0,50	-0,32	-0,20	+1,01	+0,44	03,94	01,34	339,37	00	04
05		+104	+0,55	-0,31	-0,19	-0,55	+0,43	08,90	01,43	4369,04	00	05
06		+116	+0,50	-0,18	-0,03	-0,93	+0,44	03,49	01,37	1144,43	00	06
07		+124	+0,55	+0,89	-0,18	-0,09	+0,40	03,41	04,00	13,47	14757	07
08		+138	+0,35	+1,13	-0,79	-4,55	+0,43	02,91	04,07	9,03	2106	08
09		+151	+0,60	-0,40	-0,81	+0,05	+0,38	02,93	03,51	870,44	00	09
10		+162	+0,55	-0,37	+0,19	+3,09	+0,42	02,44	03,78	1415,43	00	10
11		+170	+0,39	-0,18	+0,01	+1,06	+0,57	03,04	08,56	49,24	72974	11

HP-TEMPERATUR:

Z	H	P	T	TP	PT	PPT	E	S	RF	+L	-L	+I-	L
16	2008	7908	+10,7	+06,3	3036	3190	07,85	05,76	57,3	01,8	////	1,98	01,9
17	1840	8049	+11,4	+07,1	3030	3189	07,69	05,97	56,8	01,1	////	1,82	01,7
18	1773	8110	+11,9	+07,8	3026	3199	08,34	06,45	70,1	00,8	////	1,94	01,4
19	1719	8167	+11,8	+09,1	3019	3825	10,10	07,73	79,9	00,9	////	1,97	01,1
20	1601	8277	+12,5	+09,4	3015	3817	10,10	07,72	69,7	00,7	00,[illegible]	2,59	01,0

Z	DH	TV	G-T	G-E	G-S	G-RD	G-PT	I	N	A	D	Z
16		+116	,	,	,	,	,	03,49	01,37	,		16
17	159	+124	+0,57	-0,24	+0,15	+0,01	+0,44	02,72	01,75	25,60	17270	17
18	065	+130	+0,86	+1,06	+0,79	+5,33	+0,51	02,17	02,46	3,04	3117	18
19	060	+131	+0,17	+0,85	+0,11	+1,23	+1,19	02,41	03,07	4,33	4476	19
20	117	+133	+0,60	+0,90	+0,79	+2,42	+0,37	02,41	04,09	93,33	43464	20

HP-FEUCHTIGKEIT:

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Z-0787 30.09.1970 17,00 UHR

7

HAUPT-NIVEAUS:

Z	H	P	T	TP	PT	PPT	E	S	RF	+L	-L	+I-	L
01	3000	7077	+06,4	+00,6	3074	3176	04,40	04,35	56,9	01,4	////	1,76	08,4
02	2800	7126	+05,0	+01,4	3056	3178	04,85	04,41	55,7	01,7	////	1,78	08,8
03	2600	7477	+06,0	+02,3	3048	3178	05,41	04,58	57,7	01,4	////	1,78	08,8
04	2400	7548	+07,7	+03,6	3030	3177	06,41	05,30	65,7	01,2	////	1,78	01,9
05	2200	7781	+07,7	+06,5	3024	3173	06,77	05,49	64,9	01,1	////	1,76	01,7
06	2000	7903	+06,9	+05,4	3017	3186	07,14	05,64	66,6	01,6	////	1,77	01,7
07	1800	8059	+10,3	+07,3	3019	3184	07,61	05,72	59,1	01,7	////	1,76	01,9
08	1600	4860	+11,7	+07,1	3004	3198	07,57	05,70	55,0	01,1	00,6	1,97	01,8
09	1400	8474	+13,0	+08,9	3000	3194	07,98	05,94	58,6	01,2	00,6	1,99	01,9
10	1800	8473	+13,9	+04,9	8982	3181	08,53	06,14	53,7	01,0	00,5	1,94	01,8
11	1000	8875	+14,0	+10,9	8971	3174	11,08	07,80	44,5	00,9	00,6	1,86	01,5

Z	DH	TV	G-T	G-E	G-S	G-RD	G-PT	I	N	A	D	Z
01		+050	,	,	,	,	,	03,25	00,25	,		01
02		+057	+0,43	-0,14	+0,11	+0,45	+0,57	03,11	01,81	80,48	30132	02
03		+067	+0,57	-0,28	+0,19	+1,47	+0,48	03,71	01,07	19,57	81717	03
04		+075	+0,30	-0,40	-0,35	+3,88	+0,60	02,94	01,39	49,54	85596	04
05		+094	+0,45	-0,19	-0,09	+0,59	+0,42	03,91	01,26	95,39	80336	05
06		+098	+0,60	-0,14	-0,16	+0,70	+0,36	02,49	01,46	(0,01)	00	06
07		+112	+0,50	-0,10	-0,04	+1,75	+0,46	02,41	01,45	80,44	65599	07
08		+126	+0,49	-0,54	+0,01	+4,84	+0,50	02,41	01,55	2,8,45	00	08
09		+140	+0,65	+0,14	-0,07	+1,06	+0,31	03,33	01,48	10,3,4	00	09
10		+149	+0,44	-0,07	-0,15	-0,61	+0,54	02,48	01,76	41,14	39493	10
11		+193	+0,09	+1,27	+0,48	-7,13	+0,47	03,04	02,97	130,40	00	11

HP-TEMPERATUR:

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Example G_1 28 Sept. 1970

2

[illegible]

3

[illegible]

4

[illegible]

6

[illegible]

Example G_2 28 Sept. 1970

(7)

[illegible]

(8)

[illegible]

(9)

[illegible]

(10)

[illegible]

Example H 26 Sept. 1970

(3)

Z-0606 26-09-1970 10:35 UHR

HAUPT-NIVEAUS

Z	H	P	T	TF	PT	SPT	E	S	RF	+L	-L	+I-	L
[illegible]													

Z	DH	TV	0-T	0-E	0-S	0-RF	0-PT	I	N	A	D	Z
[illegible]												

NP-TEMPERATUR

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Z	H	P	T	TF	PT	SPT	E	S	RF	+L	-L	+I-	L
[illegible]													

Z	DH	TV	0-T	0-E	0-S	0-RF	0-PT	I	N	A	D	Z
[illegible]												

(4)

Z-0606 26-09-1970 10:10 UHR

HAUPT-NIVEAUS

Z	H	P	T	TF	PT	SPT	E	S	RF	+L	-L	+I-	L
[illegible]													

Z	DH	TV	0-T	0-E	0-S	0-RF	0-PT	I	N	A	D	Z
[illegible]												

NP-TEMPERATUR

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Z	H	P	T	TF	PT	SPT	E	S	RF	+L	-L	+I-	L
[illegible]													

Z	DH	TV	0-T	0-E	0-S	0-RF	0-PT	I	N	A	D	Z
[illegible]												

NP-LEITFAEHIGKEIT

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(5)

Z-0606 26-09-1970 14:30 UHR

HAUPT-NIVEAUS

Z	H	P	T	TF	PT	SPT	E	S	RF	+L	-L	+I-	L
[illegible]													

Z	DH	TV	0-T	0-E	0-S	0-RF	0-PT	I	N	A	D	Z
[illegible]												

NP-TEMPERATUR

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Z	H	P	T	TF	PT	SPT	E	S	RF	+L	-L	+I-	L
[illegible]													

Z	DH	TV	0-T	0-E	0-S	0-RF	0-PT	I	N	A	D	Z
[illegible]												

NP-LEITFAEHIGKEIT

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(6)

[illegible] 15:37 [illegible]

[illegible]

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[illegible]

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Example J 17 Sept. 1970

[illegible] ①

HAUPT-NIVEAUS:

Z	H	P	T	TP	PT	EPT	E	S	RF	+L	-L	+|-	L
1	3000	7180	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
2	8800	7870	+08,4	+04,7	[illegible]	303,6	01,44	01,40	84,3	08,4	00,0	7,09	08,5
3	8600	7440	+08,9	+04,8	[illegible]	301,8	01,61	01,35	84,4	08,8	00,0	8,11	08,3
4	8400	7480	+08,8	+08,8	[illegible]	308,7	03,38	08,71	83,0	00,8	00,0	9,18	00,9
5	2800	7818	+08,7	+01,9	[illegible]	308,8	03,87	03,09	[illegible]	00,7	00,0	1,88	00,7
6	8000	8008	+01,9	+00,5	[illegible]	308,7	04,38	03,37	64,3	00,3	00,0	7,38	00,7
7	1800	8198	+03,3	+00,3	[illegible]	308,0	04,48	03,51	[illegible]	00,6	00,0	7,63	00,7
8	1600	8398	+04,7	+01,3	[illegible]	301,6	04,88	03,38	[illegible]	00,6	00,4	6,01	00,9
9	1400	8588	+08,6	+08,6	[illegible]	301,6	05,88	03,80	[illegible]	00,6	00,4	1,50	01,0
1	1800	8805	+07,7	+03,9	[illegible]	308,1	06,10	04,38	[illegible]	00,5	00,4	1,18	01,0
8	1000	9018	+08,8	[illegible]	[illegible]	301,6	06,45	04,47	[illegible]	00,6	00,6	6,68	01,1

Z	DH	TV	G-T	G-E	G-S	G-RF	G-PT	I	N	A	D	Z
1		+00,8	,	,	,	,	,	08,51	01,04	,		1
8		+00,6	+0,30	+0,05	+0,06	+1,67	+0,78	08,18	00,81	11,11	18981	8
3		+01,1	+0,86	+0,03	+0,06	+0,67	+0,79	01,76	00,78	890,00	00	3
4		+00,6	-0,37	-0,31	-0,78	-8,35	+1,47	01,44	04,16	0,98	971	4
5		+01,6	+0,86	-0,09	-0,80	-3,33	+0,78	01,15	04,94	898,85	C3	5
6		+08,5	+0,63	-0,38	-0,86	-8,35	+0,38	00,69	04,88	1193,75	00	6
7		+03,8	+0,74	-0,01	+0,03	+8,48	+0,87	00,65	03,68	99,35	98908	7
8		+08,3	+0,73	-0,11	-0,04	+1,66	+0,87	00,98	04,39	48,44	48180	8
9		+07,0	+0,89	-0,14	-0,06	+1,80	+0,11	01,38	03,88	47,78	44441	9
1		+08,0	+0,47	-0,98	-0,38	-3,43	+0,84	01,09	03,34	4437,77	00	1
8		+08,9	+0,47	-0,19	-0,08	+0,13	+0,84	08,08	03,67	1348,80	00	8

HP-TEMPERATUR:

Z	H	P	T	TP	PT	EPT	E	S	RF	+L	-L	+|-	L
1	8460	7440	+00,9	-04,4	896,1	301,8	01,61	01,38	84,4	08,8	00,0	8,11	08,3
8	8398	7360	+01,0	-03,8	897,0	301,8	08,04	01,48	30,8	01,7	00,0	0,07	01,8
3	8480	7489	+00,8	-08,8	[illegible]	308,7	03,38	08,71	83,1	00,8	00,0	9,18	00,9

Z	DH	TV	G-T	G-E	G-S	G-RF	G-PT	I	N	A	D	Z
1		+01,1	,	,	,	,	,	01,76	00,78	,		1
8	0117	+01,8	+0,09	+0,37	-0,89	-8,39	+0,90	01,38	01,07	3,89	8606	8
3	0071	+00,6	-1,11	-1,76	-1,43	-1,86	+0,67	01,47	04,84	0,84	851	3

HP-FEUCHTIGKEIT:

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E-0440 17.09.1970 13.00 UHR ②

HAUPT-NIVEAUS:

Z	H	P	T	TP	PT	EPT	E	S	RF	+L	-L	+|-	L
1	3800	7150	+08,9	+03,8	303,7	306,1	[illegible]	[illegible]	[illegible]	[illegible]	00,0	6,85	08,8
2	8800	7873	+08,6	+03,8	308,0	308,5	[illegible]	[illegible]	08,5	08,3	00,0	5,87	08,4
3	8600	7480	+08,9	+04,8	300,3	308,1	00,80	[illegible]	08,5	[illegible]	00,0	3,88	08,1
4	8400	7489	+03,0	-01,3	898,4	305,7	[illegible]	03,11	[illegible]	01,0	00,0	8,13	01,1
5	2800	7818	+03,7	+00,9	897,1	308,0	05,01	04,05	63,8	00,8	00,0	7,83	00,7
6	8000	8004	+04,8	+01,8	896,0	307,4	05,41	04,86	64,5	00,6	00,0	7,63	00,8
7	1800	8187	+04,1	+00,7	896,8	306,9	05,97	04,84	80,1	00,7	00,0	6,01	00,8
8	1600	8396	+07,0	+03,8	895,4	306,1	05,46	04,06	51,6	00,6	00,3	6,03	01,0
9	1400	8585	+08,4	+04,8	893,0	308,5	05,97	04,38	50,7	00,6	00,4	1,51	01,1
1	1800	8800	+10,8	+06,4	894,5	305,3	05,88	04,13	44,0	00,6	00,4	1,88	01,1
8	1000	9010	+18,6	+06,6	894,6	305,5	06,17	04,87	[illegible]	00,5	00,5	0,98	01,1

Z	DH	TV	G-T	G-E	G-S	G-RF	G-PT	I	N	A	D	Z
1		+08,8	,	,	,	,	,	08,48	00,89	,		1
8		+06,6	+0,16	+0,08	-0,08	-0,31	+1,19	08,08	00,64	8,38	9835	8
3		+03,0	+0,15	+0,30	+0,88	-3,90	+0,87	01,71	00,69	1897,66	00	3
4		+03,4	+0,05	+1,87	+1,03	-4,18	+0,97	01,38	01,88	1,67	1778	4
5		+04,3	+0,35	-0,67	-0,57	+0,55	+0,84	01,07	03,53	16,83	10788	5
6		+08,3	+0,48	+0,80	+0,11	-0,41	+0,33	00,80	08,78	89,03	[illegible]	6
7		+06,8	+0,75	+0,05	+0,01	+8,68	+0,81	00,55	01,89	84,83	[illegible]	7
8		+08,5	+0,64	+0,04	+0,09	+3,76	+0,11	00,48	01,07	7,44	7485	8
9		+10,1	+0,80	-0,86	-0,14	+0,43	+0,15	00,84	00,78	16,86	15600	9
1		+11,5	+0,69	+0,06	+0,11	+8,67	+0,86	00,48	00,78	163,44	00	1
8		+13,3	+0,89	+0,17	+0,07	+1,38	+0,06	00,41	00,68	608,91	00	8

HP-TEMPERATUR:

Z	H	P	T	TP	PT	EPT	E	S	RF	+L	-L	+|-	L
1	8800	7440	+08,9	-04,8	300,3	308,1	01,80	00,66	10,8	08,0	00,0	3,88	08,1
8	8408	7541	+08,8	-08,4	899,1	304,6	03,41	01,99	31,3	01,3	00,0	6,41	01,4
3	8401	7489	+03,0	-01,3	898,4	305,7	03,31	08,71	48,4	01,0	00,0	8,13	01,1
4	8898	7783	+03,0	-00,1	897,3	307,1	04,47	03,61	57,3	00,7	00,0	6,68	00,8
5	8800	7812	+03,7	+00,9	897,1	308,0	05,07	04,05	63,6	00,4	00,0	7,63	00,7

Z	DH	TV	G-T	G-E	G-S	G-RF	G-PT	I	N	A	D	Z
1		+03,0	,	,	,	,	,	01,71	00,69	,		1
8	0108	+03,1	+0,10	-1,58	-1,89	+0,61	+1,13	01,58	01,38	0,88	937	8
3	0098	+03,4	+0,81	-0,84	-0,78	+1,49	+0,87	01,38	01,88	4,85	4909	3
4	0108	+03,6	+0,00	-1,14	-0,89	-4,57	+1,08	01,81	03,18	3,83	3895	4
5	0098	+04,3	+0,71	-0,61	-0,44	-4,61	+0,84	01,07	03,53	44,81	88941	5

HP-FEUCHTIGKEIT:

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E-0441 17.09.1970 18.15 UHR ③

HAUPT-NIVEAUS:

Z	H	P	T	TP	PT	EPT	E	S	RF	+L	-L	+|-	L
1	3000	7180	+08,9	-04,8	304,8	308,3	00,45	00,40	08,8	08,4	00,0	7,40	08,5
2	8800	7841	+03,0	-04,8	300,8	303,7	00,34	00,89	04,4	08,5	00,0	8,84	08,6
3	8800	7416	+03,1	-01,9	300,9	307,3	08,76	08,38	35,1	01,8	00,0	0,53	01,9
4	8400	7895	+03,3	+00,8	899,1	310,7	05,88	04,88	67,3	00,6	00,0	9,08	00,9
5	8800	7778	+04,8	+00,9	898,6	308,4	04,51	03,68	88,4	00,9	00,0	0,15	01,0
6	8000	7964	+05,8	+08,9	897,7	310,3	05,00	04,70	65,0	00,7	00,0	7,78	00,7
7	1800	8194	+06,9	+03,6	896,9	309,4	06,13	04,89	61,5	00,6	00,0	7,85	00,7
8	1600	8348	+07,7	+04,6	898,7	309,1	06,77	05,06	64,4	00,6	00,8	8,91	00,8
9	1400	8548	+09,3	+05,4	898,4	308,4	06,76	04,94	57,7	00,6	00,4	1,88	01,0
1	1800	8751	+10,8	+06,3	894,4	308,0	07,89	05,80	58,5	00,5	00,4	1,88	00,9
8	1000	8960	+10,9	+06,9	893,1	306,8	07,98	05,88	58,1	00,5	00,6	0,78	01,1

Z	DH	TV	G-T	G-E	G-S	G-RF	G-PT	I	N	A	D	Z
1		+08,9	,	,	,	,	,	08,43	00,77	,		1
8		+03,0	+0,07	+0,08	+0,07	+1,03	+0,96	08,08	00,61	9,48	10506	8
3		+03,4	+0,05	-1,81	-1,01	-8,36	+0,98	01,70	00,98	6,64	7855	3
4		+04,C	+0,10	-1,83	-0,98	-4,13	+0,91	01,38	03,38	1,51	1615	4
5		+05,4	+0,78	+0,35	+0,33	+7,46	+0,91	01,09	08,39	86,93	88178	5
[illegible]		[illegible]	+0,99	+0,74	+0,84	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
7		+07,7	+0,85	+0,07	+0,01	[illegible]	+0,42	00,59	08,38	[illegible]	96135	7
8		+08,5	+0,40	+0,38	+0,19	+1,48	[illegible]	[illegible]	[illegible]	84,84	84496	8
9		+10,1	+0,79	+0,00	+0,06	+3,30	+0,16	00,48	01,09	18,88	15399	9
1		+11,1	+0,45	-0,86	+0,13	-0,48	+0,51	00,43	01,08	0,01	00	1
8		+11,8	+0,34	-0,14	+0,04	+0,88	+0,68	00,48	00,69	7,78	7110	8

HP-TEMPERATUR:

Z	H	P	T	TP	PT	EPT	E	S	RF	+L	-L	+|-	L
1	8738	7300	+ 8,9	-04,8	308,0	308,1	00,87	00,74	11,1	09,1	00,0	3,66	08,8
8	8599	7416	+ [illegible]	-01,9	300,9	307,3	08,76	08,38	35,1	01,8	00,0	0,53	01,9
3	8548	7468	+[illegible]	-00,8	300,1	310,4	08,48	03,74	57,8	00,7	00,0	8,39	00,8
4	8506	7499	+0[illegible]	+00,1	899,7	310,5	04,76	03,94	63,8	00,8	00,0	9,38	00,9
5	8430	7595	+03,[illegible]	+00,8	899,1	310,7	05,88	04,88	67,3	00,8	00,0	9,08	00,9

Z	DH	V	G-T	G-E	G-S	G-HF	G-PT	I	N	A	D	Z
1		+03,0	,	,	,	,	,	01,93	00,74	,		1
8	0138	+03,4	+0,15	-1,44	-1,83	-8,13	+0,86	01,68	00,91	30,74	33468	8
3	0051	+03,5	-0,39	-3,31	-8,74	-3,88	+1,44	01,40	04,40	0,08	88	3
4	0041	+03,5	+0,00	-0,69	-0,53	-3,18	+1,02	01,33	03,89	4,75	3084	4
5	0106	+04,0	+0,38	-0,43	-0,30	-3,83	+0,61	01,38	03,38	1580,88	00	5

HP-FEUCHTIGKEIT:

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E-0448 17.09.1970 16.85 UHR ④

HAUPT-NIVEAUS:

Z	H	P	T	TP	PT	EPT	E	S	RF	+L	-L	+|-	L
1	3000	7108	+08,9	-03,6	304,4	303,9	00,19	00,16	08,4	08,8	00,0	6,80	08,3
2	8800	7888	+03,4	-04,6	303,4	303,8	00,14	00,14	01,9	08,3	00,0	6,33	08,4
3	8600	7404	+03,8	-01,3	301,8	304,5	01,18	00,97	13,9	01,8	00,0	1,06	01,9
4	8400	7884	+03,6	+00,8	899,8	310,8	04,78	03,93	60,4	00,8	00,0	8,93	00,8
5	8800	7749	+04,8	+08,4	898,4	311,8	06,18	04,96	73,3	00,5	00,0	6,18	00,6
6	8000	7957	+05,8	+08,7	897,8	310,0	05,79	04,94	68,9	00,6	00,0	7,55	00,7
7	1800	8149	+06,8	+04,0	896,8	310,3	06,68	05,07	67,0	00,5	00,0	6,03	00,6
8	1600	8346	+07,7	+04,9	895,7	309,8	07,18	05,38	67,6	00,5	00,1	3,88	00,7
9	1400	8546	+09,0	+05,9	893,1	309,8	07,53	05,80	65,6	00,5	00,3	1,44	00,8
1	1800	8751	+10,8	+06,6	894,4	308,6	07,66	05,46	61,5	00,4	00,3	1,84	00,8
8	1000	8960	+11,3	+07,3	893,5	307,7	07,86	05,47	58,6	00,5	00,4	1,08	01,0

Z	DH	TV	G-T	G-E	G-S	G-RF	G-PT	I	N	A	D	Z
1		+08,P	,	,	,	,	,	08,45	00,61	,		1
8		+03,4	+0,35	-0,88	+0,81	-3,08	+0,66	08,07	00,46	5,08	5618	2
3		+03,9	+0,80	-0,50	-0,48	-5,98	+0,88	01,78	00,98	14,64	16069	3
4		+04,8	+0,10	-1,81	+1,48	-3,30	+1,14	01,41	08,33	0,90	963	4
5		+05,3	+0,45	-0,70	-0,58	-6,46	+0,54	01,13	03,89	81,75	88786	5
6		+06,5	+0,65	+0,80	+0,81	+5,33	+0,38	00,88	08,10	14,07	14471	6
7		+07,6	+0,30	-0,48	-0,87	-8,14	+0,48	00,65	08,58	135,18	00	7
8		+08,6	+0,45	-0,85	-0,18	-0,38	+0,54	00,57	01,78	31,48	31033	8
9		+09,9	+0,65	-0,81	-0,09	+1,08	+0,38	00,80	01,04	[illegible]	7771	9
1		+11,1	+0,60	-0,06	+0,08	+8,08	+0,37	00,46	01,11	449,08	00	1
8		+18,8	+0,85	-0,10	-0,00	+1,65	+0,48	00,44	00,66	5,60	5805	8

HP-TEMPERATUR:

Z	H	P	T	TP	PT	EPT	E	S	RF	+L	-L	+|-	L
1	8800	[illegible]38	+03,4	-04,8	303,4	303,8	00,16	00,[illegible]	[illegible]	[illegible]	00,0	6,33	08,4
8	8717	7300	+03,8	-04,8	303,0	304,0	00,43	00,37	05,1	08,3	00,0	6,18	08,4
3	8646	7363	+03,8	-03,8	308,3	304,0	00,74	00,63	08,9	08,1	00,0	4,87	08,8
4	8548	7450	+03,7	-01,8	301,8	307,0	08,55	08,13	30,8	01,4	00,0	5,64	01,4
5	8485	7585	+03,8	+00,1	899,7	31[illegible],8	04,41	03,88	59,9	00,8	00,0	9,98	00,9
6	8400	7584	+03,6	+00,5	899,5	310,8	04,78	03,93	60,4	00,8	00,0	8,93	00,8

Z	DH	TV	G-T	G-E	G-S	G-HF	G-PT	I	N	A	D	Z
1		+03,4	,	,	,	,	,	08,07	00,46	,		1
8	0068	+03,8	+0,49	+0,33	-0,88	-3,69	+0,51	01,90	00,63	88,43	84798	8
3	0071	+03,9	+0,00	-0,43	-0,36	-5,88	+1,04	01,79	00,46	15,03	16469	3
4	0097	+04,0	-0,10	-1,65	-1,54	-8,51	+1,15	01,66	03,96	0,46	500	4
5	0083	+03,8	+0,60	-1,48	-8,03	-4,96	+1,49	01,50	08,03	0,65	698	5
6	0084	+04,8	+0,68	-0,86	-0,17	-0,78	+0,38	01,41	08,33	19,75	80977	6

HP-FEUCHTIGKEIT:

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Z	H	P	T	TP	PT	EPT	E	S	HF	+L	-L	+|-	L
1	8488	7510	+03,1	+00,1	899,8	310,4	04,66	03,87	61,0	00,9	00,0	0,30	01,0
8	8845	7787	+04,3	+08,8	898,7	318,0	06,09	04,91	73,8	00,5	00,0	6,33	00,6

Z	DH	TV	G-T	G-E	G-S	G-HF	G-PT	I	N	A	D	Z
1		+03,7	,	,	,	,	,	01,53	01,93	,		1
8	0P36	+05,1	+0,51	+0,60	+0,44	-5,14	+0,48	01,18	03,67	14,15	14918	8

4. Tables I - XII

TABLE I

RaB in air; units: $10^{-12}\mu c/cm^3$

Station designations: **Z** **Zugspitze** 2964 m a.s.l.
W **Wank** 1780 m a.s.l.
G **Garmisch-Partenkirchen** 730 m a.s.l.

Measurement periods : a = 2150 - 0920, b = 0950 - 1220,
c = 1250 - 1620. (Central European Time)

Month: <u>July 1970</u> ("No measurement" is denoted by: -)

	a			b			c		
	Z	W	G	Z	W	G	Z	W	G
1.	8,5	7	130	14,2	16	82	7,9	61	85
2.	-	57	233	12,2	24	64	14,8	-	58
3.	8,1	28	108	8,8	16	43	7,1	10	37
4.	3,3	18	130	1,9	11	46	3,9	17	57
5.	-	-	171	-	-	54	-	-	-
6.	4,2	-	263	4,9	57	145	17,5	64	92
7.	4,1	49	299	20,4	109	160	60,6	108	150
8.	5,8	116	256	71,7	145	237	90,3	154	229
9.	-	75	194	55,9	76	128	31,8	11	57
10.	32,7	90	304	58,7	81	116	62,9	81	86
11.	100,3	135	333	86,5	146	151	92,8	90	129
12.	-	-	268	-	-	115	-	-	-
13.	49,7	150	-	80,9	171	228	96,2	141	189
14.	65,5	87	313	68,2	113	180	66,9	103	131
15.	3,7	4	35	2,5	7	39	1,5	10	53
16.	3,2	7	80	1,3	4	58	0,8	-	38
17.	1,7	2	54	0,5	4	50	0,6	-	46
18.	2,6	15	180	7,7	35	93	5,4	21	53
19.	-	-	172	-	-	88	-	-	-
20.	75,1	-	306	99,9	157	208	93,2	166	153
21.	63,7	63	148	79,3	77	135	55,9	86	89
22.	69,7	156	336	64,0	150	200	85,1	113	138
23.	68,3	107	320	78,3	157	291	114,2	105	147
24.	75,8	75	200	84,4	126	-	88,2	104	183
25.	1,6	14	-	1,6	9	-	1,2	14	38
26.	-	-	-	-	-	38	-	-	-
27.	1,4	15	173	2,1	15	128	3,4	23	113
28.	5,2	74	316	13,3	46	190	69,3	108	186
29.	77,4	68	307	111,4	110	131	17,6	32	96
30.	49,3	97	304	58,1	150	213	73,1	118	152
31.	44,2	89	240	55,2	126	184	65,4	46	-

TABLE II

RaB in air; units: $10^{-12} \mu c/cm^3$

Station Designations: **Z** **Zugspitze** **2964 m a.s.l.**
W **Wank** **1780 m a.s.l.**
G Garmisch-Partenkirchen 730 m a.s.l.

Measurement periods : a = 2150 - 0920, b = 0950 - 1220,
c = 1250 - 1620. (Central European Time)

Month: <u>August 1970</u> ("No measurement" is denoted by: -)

	a			b			c		
	Z	W	G	Z	W	G	Z	W	G
1.	22,1	49	297	40,5	112	246	51,2	44	65
2.	-	-	-	-	-	174	-	-	-
3.	31,8	101	-	63,2	111	-	67,2	77	-
4.	38,8	69	286	41,0	36	148	70,4	108	145
5.	110,3	147	359	99,8	125	143	89,7	82	-
6.	71,3	160	333	76,2	166	268	97,0	137	191
7.	142,6	107	349	87,5	95	188	73,0	94	-
8.	50,4	49	242	45,6	87	120	25,2	48	96
9.	-	-	161	-	-	130	-	-	-
10.	1,5	-	569	1,6	4	338	-	7	431
11.	0,3	32	466	-	58	174	-	26	112
12.	2.7	18	165	10,7	50	107	46,6	56	-
13.	28,4	98	-	39,8	105	-	78,5	122	132
14.	83,7	107	388	73,5	136	200	53,4	77	100
15.	-	-	-	-	-	-	-	-	-
16.	-	-	-	-	-	-	-	-	-
17.	28,3	98	268	0,8	17	153	3,6	18	109
18.	15,6	67	215	13,3	103	169	40,0	99	133
19.	70,5	172	426	85,6	232	295	105,0	154	134
20.	77,8	110	449	101,7	132	150	53,7	23	110
21.	3,8	10	90	4,4	9	66	-	9	61
22.	5,1	25	151	7,8	35	93	28,6	41	68
23.	-	-	258	-	-	109	-	-	-
24.	-	-	194	1,7	20	243	1,2	19	102
25.	21,9	62	304	19,9	91	158	35,3	76	93
26.	15,5	101	306	24,1	128	207	82,2	86	117
27.	72,0	100	382	78,3	104	203	86,3	125	189
28.	28,3	48	217	50,7	58	130	82,6	70	153
29.	75,2	115	318	94,5	140	240	87,4	156	210
30.	-	-	503	-	-	174	-	-	-
31.	33,1	-	306	36,0	121	198	39,5	101	133

TABLE III

RaB in air; units: $10^{-12} \mu c/cm^3$

Station Designations: **Z Zugspitze** 2964 m a.s.l.
W Wank 1780 m a.s.l.
G Garmisch-Partenkirchen 730 m a.s.l.

Measurement periods : a = 2150 - 0920, b = 0950 - 1220,
c = 1250 - 1620. (Central European Time)

Month: September 1970 ("No measurement" is denoted by: -)

	a			b			c		
	Z	W	G	Z	W	G	Z	W	G
1.	8,3	56	535	3,7	33	117	4,8	85	198
2.	38,4	80	167	45,5	114	154	88,5	129	12[illegible]
3.	76,4	124	448	104,4	127	250	60,8	123	247
4.	2,4	41	279	3,7	22	67	13,2	30	59
5.	2,7	22	342	-	4	114	1,4	16	61
6.	-	-	92	-	-	57	-	-	-
7.	3,1	40	136	10,4	54	115	26,4	82	81
8.	65,6	120	276	44,5	131	230	84,7	153	160
9.	67,9	136	279	69,7	181	255	121,5	163	158
10.	54,0	112	301	59,7	101	157	50,9	91	181
11.	63,2	91	326	62,8	65	105	15,4	12	75
12.	37,8	20	88	51,8	35	104	65,3	47	99
13.	-	-	107	-	-	44	-	-	-
14.	29,4	58	258	26,3	153	160	63,4	101	103
15.	83,7	-	394	124,8	131	208	138,7	156	159
16.	4,3	16	74	2,3	11	84	1,8	12	37
17.	6,3	38	235	3,5	28	53	1,7	33	59
18.	5,5	26	275	11,1	53	184	24,0	83	124
19.	27,3	108	380	26,9	177	376	43,9	193	318
20.	-	-	504	-	-	237	-	-	-
21.	8,0	46	527	1,6	92	150	-	91	134
22.	1,6	48	697	12,4	143	201	36.8	94	119
23.	4,8	89	273	5,9	117	153	56,3	84	122
24.	8,4	84	410	0,9	109	201	24,3	132	167
25.	2,6	10	331	5,6	70	175	14,3	61	133
26.	5,4	41	401	3,2	138	230	31,2	170	164
27.	-	-	419	-	-	257	-	-	-
28.	5,8	19	311	6,6	74	265	22,3	144	211
29.	13,6	64	384	36,2	109	315	64,3	200	333
30.	5,9	44	329	12,8	50	200	41,6	146	226

TABLE IV

RaB in air; units 10^{-12} µc/cm^3

Station Designations: Z Zugspitze 2964 m a.s.l.
W Wank 1780 m a.s.l.
G Garmisch-Partenkirchen 730 m a.s.l.

Measurement periods : a = 2150 - 0920, b = 0950 - 1220,
c = 1250 - 1620. (Central European Time)

Month: <u>October 1970</u> ("No measurement" is denoted by: -)

	a			b			c		
	Z	W	G	Z	W	G	Z	W	G
1.	-	4	130	-	6	47	-	2	53
2.	1,7	16	99	0,2	9	96	0,1	8	34
3.	2,7	3	45	0,9	-	35	2,4	2	15
4.	-	-	59	-	-	56	-	-	-
5.	1,1	11	175	0,6	11	145	0,9	27	126
6.	15,5	22	190	20,6	74	143	50,3	103	174
7.	24,8	86	210	29,3	77	107	65,6	80	109
8.	40,3	43	251	26,3	61	245	34,8	50	294
9.	40,7	49	631	40,5	40	410	45,9	74	401
10.	27,7	71	276	28,6	74	123	52,8	103	392
11.	-	-	359	-	-	653	-	-	-
12.	12,4	51	238	9,9	124	431	14,0	155	399
13.	8,8	84	407	7,0	112	382	15,9	168	270
14.	16,4	65	727	20,2	232	373	46,4	192	392
15.	4,7	78	268	5,4	150	200	5,7	34	141
16.	7,4	61	412	9,9	82	322	16,7	78	141
17.	6,8	61	700	4,4	79	361	16,6	145	354
18.	-	-	395	-	-	464	-	-	-
19.	11,8	18	297	13,6	31	282	19,6	69	203
20.	13,1	11	71	6,0	4	136	8,7	3	171
21.	18,9	25	159	5,2	21	74	4,1	20	74
22.	11,1	32	226	14,7	19	63	13,4	40	36
23.	-	7	129	3,5	3	57	3,2	4	18
24.	14,2	23	175	9,6	61	112	12,9	69	102
25.	-	-	221	-	-	117	-	-	-
26.	-	9	-	2,3	10	345	6,6	36	200
27.	13,3	44	493	13,4	33	345	16,4	105	193
28.	7,2	38	487	6,0	66	264	16,1	60	169
29.	3,4	17	302	0,8	9	138	2,0	7	149
30.	6,5	15	286	2,5	35	208	8,4	25	205
31.	7,6	13	208	7,3	18	305	14,6	21	252

TABLE V

Station Designations: Z Zugspitze 2964 m a.s.l.
W Wank 1780 m a.s.l.
G Garmisch-Partenkirchen 730 m a.s.l.

Measurement periods : a = 2150 - 0920, b = 0950 - 1220,
c = 1250 - 1620. (Central European Time)

Month: November 1970 ("No measurement" is denoted by: -)

	a			b			c		
	Z	W	G	Z	W	G	Z	W	G
1.	-	-	221	-	-	145	-	-	-
2.	4,8	10	271	9,8	7	82	12,0	10	56
3.	14,4	22	276	11,6	9	35	12,2	11	34
4.	26,9	51	319	19,4	65	129	24,8	77	134
5.	7,0	15	416	8,3	10	196	4,2	5	36
6.	14,2	9	54	4,5	8	41	9,3	16	58
7.	20,1	65	384	19,7	125	320	49,5	193	289
8.	-	-	446	-	-	383	-	-	-
9.	35,2	48	484	15,2	47	373	13,5	29	91
10.	10,8	17	64	8,6	14	45	7,8	13	46
11.	4,7	28	334	2,6	25	196	2,3	6	270
12.	11,0	30	366	11,4	41	222	17,7	83	177
13.	82,9	83	415	80,1	136	241	86,8	116	183
14.	65,3	88	521	61,1	136	310	67,8	26	263
15.	-	-	211	-	-	91	-	-	-
16.	7,9	5	109	10,3	4	78	17,0	7	79
17.	3,3	21	315	1,3	10	228	0,7	2	227
18.	16,6	36	327	18,5	70	291	28,1	78	245
19.	32,2	32	302	39,4	29	209	48,1	70	146
20.	11,7	10	193	10,6	7	189	9,3	28	99
21.	45,8	-	384	57,9	-	174	44,3	-	61
22.	-	-	194	-	-	86	-	-	-
23.	3,4	19	306	2,9	14	145	-	23	146
24.	2,8	7	236	1,9	5	188	1,3	5	209
25.	4,7	22	245	3,6	16	189	1,3	83	294
26.	5,9	11	285	0,3	25	271	-	47	247
27.	3,4	24	551	0,7	40	308	0,4	61	403
28.	2,9	-	202	2,1	-	187	23,5	-	158
29.	-	-	197	-	-	340	-	-	-
30.	57,7	33	546	7,6	5	620	7,2	14	261

TABLE VI

Station Designation: Z Zugspitze 2964 m a.s.l.
W Wank 1780 m a.s.l.
G Garmisch-Partenkirchen 730 m a.s.l.

Measurement periods: a = 2150 - 0920, b = 0950 - 1220.
b = 1250 - 1620. (Central European Time)

Month: December 1970 ("No measurement" is denoted by: -)

	a			b			c		
	Z	W	G	Z	W	G	Z	W	G
1.	22,9	70	350	24,9	85	292	55,4	92	315
2.	6,7	9	285	7,5	18	175	7,5	22	146
3.	10,9	27	279	-	21	224	-	4	135
4.	-	11	233	4,1	15	250	-	-	181
5.	15,0	-	317	4,7	-	371	2,1	-	59
6.	-	-	343	-	-	183	-	-	-
7.	57,0	-	505	73,9	85	648	74,6	226	333
8.	42,0	23	187	38,7	23	205	9,4	72	233
9.	3,2	17	513	1,3	10	397	1,5	10	401
10.	2,9	6	746	0,2	12	672	-	38	551
11.	3,1	16	1045	1,6	13	557	1,4	36	509
12.	6,8	49	239	6,1	23	228	9,7	33	344
13.	-	-	317	-	-	570	-	-	-
14.	17,6	142	824	14,2	148	825	30,7	140	750
15.	32,3	10	173	5,4	12	108	16,3	15	102
16.	-	11	257	2,1	16	332	3,2	27	234
17.	2,4	7	804	0,9	9	830	-	50	630
18.	7,8	16	686	5,6	17	670	7,4	33	430
19.	5,8	54	429	5,3	74	378	3,6	105	280
20.	-	-	554	-	-	715	-	-	-
21.	2,7	15	555	1,4	26	685	6,5	16	485
22.	11,3	6	88	8,9	14	84	18,7	16	102
23.	20,4	44	436	21,7	21	260	15,9	28	152
24.	11,2	28	-	13,8	43	598	-	-	272
25.	-	-	490	-	-	495	-	-	-
26.	-	-	-	-	-	750	-	-	-
27.	-	-	328	-	-	850	-	-	-
28.	52,0	52	559	47,4	57	510	62,2	79	546
29.	34,8	88	504	31,9	93	466	25,3	38	434
30.	39,3	113	430	63,9	168	488	71,1	68	494
31.	78,5	61	713	54,2	103	292	-	-	278

TABLE VII

RaB in air; units $10^{-12} \mu c/cm^3$

Station Designations: Z Zugspitze 2964 m a.s.l.
W Wank 1780 m a.s.l.
G Garmisch-Partenkirchen 730 m a.s.l.

Measurement periods : a = 2150 - 0920, b = 0950 - 1220,
c = 1250 - 1620, (Central European Time)

Month: January 1971 ("No measurement" is denoted by: -)

	a			b			c		
	Z	W	G	Z	W	G	Z	W	G
1.	-	-	182	-	-	120	-	-	-
2.	3,2	12	444	2,3	8	415	3,1	10	459
3.	-	-	1150	-	-	721	-	-	-
4.	17,6	6	514	31,5	54	368	34,6	133	330
5.	25,1	74	650	12,5	79	1006	17,0	120	844
6.	-	-	402	-	-	481	-	-	-
7.	8,6	51	347	6,7	19	319	7,4	45	331
8.	4,4	8	247	3,0	13	291	0,7	13	399
9.	1,9	5	256	0,1	4	350	5,2	22	345
10.	-	-	279	-	-	413	-	-	-
11.	30,8	30	290	32,5	30	292	25,5	30	287
12.	34,1	85	508	25,6	111	445	31,4	186	344
13.	21,4	124	661	14,3	145	880	17,1	160	509
14.	26,4	36	334	30,6	26	371	32,5	30	558
15.	84,1	198	516	63,4	195	536	109,2	128	150
16.	30,2	127	588	25,3	151	599	25,5	147	304
17.	-	-	560	-	-	420	-	-	-
18.	12,8	107	434	10,2	79	445	25,9	217	443
19.	57,5	81	441	52,6	73	497	48,3	95	327
20.	52,9	91	480	35,1	77	511	34,9	107	431
21.	31,2	53	388	27,2	25	498	36,4	22	369
22.	11,7	31	-	11,7	19	403	19,4	24	416
23.	30,9	91	400	23,8	119	342	21,1	124	213
24.	-	-	314	-	-	139	-	-	-
25.	17,3	-	321	32,9	62	348	36,3	37	198
26.	11,3	27	350	9,9	12	338	9,0	22	291
27.	32,7	59	330	27,5	77	297	35,1	71	160
28.	11,7	11	176	11,7	12	207	12,3	17	109
29.	10,3	119	467	7,4	122	278	12,6	145	184
30.	26,5	99	336	29,4	86	294	24,2	61	198
31.	-	-	144	-	-	78	-	-	-

TABLE VIII

RaB in air; units $10^{-12}\mu c/cm^3$

Station Designations:	Z	Zugspitze	2964 m a.s.l.
	W	Wank	1780 m a.s.l.
	G	Garmisch-Partenkirchen	730 m a.s.l.

Measurement periods : a = 2150 - 0920, b = 0950 - 1220, c = 1250 - 1620. (Central European Time)

Month: February 1971 ("No measurement" is denoted by: -)

	a			b			c		
	Z	W	G	Z	W	G	Z	W	G
1.	20,5	26	498	41,8	102	390	45,5	72	235
2.	4,1	27	57	2,0	26	60	5,7	86	74
3.	3,0	7	430	2,1	10	333	0,2	12	352
4.	11,9	3	65	16,1	4	64	11,1	15	85
5.	5,2	5	388	1,0	10	308	-	26	305
6.	8,6	2	224	..	6	445	0,8	26	392
7.	-	-	772	-	-	283	-	-	-
8.	2,8	5	414	0,3	22	212	1,0	34	134
9.	3,1	31	457	0,5	66	415	-	121	298
10.	2,0	91	635	-	117	644	-	192	478
11.	2,4	156	677	0,8	158	910	0,1	170	592
12.	5,1	76	487	-	31	364	24,3	26	135
13.	8,1	64	388	9,1	67	425	33,6	153	184
14.	-	-	615	-	-	277	-	-	-
15.	103,7	85	362	75,4	149	-	104,3	185	362
16.	54,7	56	281	35,2	34	184	53,5	16	33
17.	7,1	20	264	5,3	12	-	6,6	22	-
18.	7,3	17	-	4,1	8	280	9,9	21	275
19.	12,3	20	339	11,6	21	367	24,5	22	141
20.	12,1	7	47	12,9	20	79	12,1	16	66
21.	-	-	348	-	-	210	-	-	-
22.	8,6	23	388	3,0	15	96	6,0	7	38
23.	5,1	7	47	4,6	7	25	5,5	5	36
24.	5,7	15	236	1,5	29	117	1,1	78	93
25.	1,8	19	367	6,1	14	203	6,2	7	63
26.	-	-	46	8,6	7	34	12,0	6	40
27.	-	14	33	-	17	48	22,5	21	63
28.	-	-	338	-	-	109	-	-	-

TABLE IX

RaB in air; units 10^{-12} µc/cm^3

Station Designations: Z Zugspitze 2964 m a.s.l.
W Wank 1780 m a.s.l.
G Garmisch-Partenkirchen 730 m a.s.l.

Measurement periods : a = 2150 - 0920, b = 0950 - 1220,
c = 1250 - 1620. (Central European Time)

Month: March 1971 ("No measurement" is denoted by: -)

	a			b			c		
	Z	W	G	Z	W	G	Z	W	G
1.	58,9	72	85	57,4	73	117	65,2	70	128
2.	14,6	90	482	22,9	128	255	6,0	133	210
3.	41,1	71	470	-	113	349	98,4	112	215
4.	62,9	133	147	45,6	117	170	13,9	107	130
5.	49,2	75	553	51,2	109	209	69,6	-	129
6.	45,4	95	461	52,9	169	420	55,8	176	230
7.	-	-	613	-	-	198	-	-	-
8.	28,9	136	470	16,7	136	312	16,4	182	320
9.	11,3	130	756	19,9	192	544	14,7	101	266
10.	5,8	27	272	34,3	13	137	18,7	18	54
11.	-	18	101	9,2	15	87	-	13	64
12.	5,5	19	124	1,5	12	79	7,1	16	101
13.	4,4	16	266	1,7	35	207	5,0	65	189
14.	-	-	336	-	-	242	-	-	-
15.	23,1	180	407	17,1	169	334	62,9	157	196
16.	64,2	12	128	23,0	6	69	24,1	8	58
17,	10,2	18	232	0,8	38	125	22,4	24	138
18.	27,1	90	270	29,8	79	221	100,3	69	162
19.	24,6	30	292	22,2	37	176	41,2	47	158
20.	32,8	37	201	42,7	35	105	31,3	23	63
21.	-	-	93	-	-	41	-	-	-
22.	16,4	28	195	13,4	39	165	85,8	75	162
23.	24,9	8	60	26,3	21	61	-	5	80
24.	8,7	92	274	0,6	91	212	2,9	63	124
25.	5,7	42	381	16,4	80	201	29,4	51	78
26.	10,5	18	91	15,8	19	57	18,3	13	42
27.	16,8	3	57	17,2	12	38	13,1	13	35
28.	-	-	138	-	-	61	-	-	-
29.	6,2	-	259	1,4	58	108	37,1	36	71
30.	4,4	86	350	10,7	122	201	1,2	122	108
31.	87,8	-	317	94,7	116	352	147,6	106	266

TABLE X

RaB in air; units 10^{-12} µC/cm^3

Station Designations: Z Zugspitze 2964 m a.s.l.
W Wank 1780 m a.s.l.
G Garmisch-Partenkirchen 730 m a.s.l.

Measurement periods : a = 2150 - 0920, b = 0950 - 1220,
c = 1250 - 1620. (Central European Time)

Month: April 1971 ("No measurement" is denoted by: -)

	a			b			c		
	Z	W	G	Z	W	G	Z	W	G
1.	13,4	75	324	3,2	87	210	64,6	85	189
2.	39,0	132	388	44,2	134	259	73,5	152	242
3.	82,1	122	382	108,0	141	229	115,3	98	179
4.	-	-	-	-	-	61	-	-	-
5.	35,5	74	316	38,7	98	139	73,0	67	104
6.	26,2	67	330	29,5	68	103	51,3	47	92
7.	56,2	109	276	75,1	99	147	105,4	111	157
8.	37,3	109	265	15,4	42	149	62,2	95	129
9.	-	-	311	-	-	156	-	-	-
10.	61,4	97	507	35,7	153	263	70,6	174	255
11.	-	-	203	-	-	132	-	-	-
12.	-	-	228	-	-	90	-	-	-
13.	8,5	44	261	1,6	47	94	30,3	56	75
14.	5,8	56	304	1,0	63	130	23,5	22	53
15.	8,5	63	242	1,8	76	162	34,7	105	130
16.	53,9	76	332	54,6	81	101	47,6	76	102
17.	-	145	381	52,6	24	88	16,0	19	91
18.	-	-	178	-	-	102	-	-	-
19.	8,1	122	256	32,4	145	203	92,2	139	166
20.	77,1	129	372	109,3	140	145	75,0	85	101
21.	-	122	289	48,4	117	187	61,9	110	138
22.	67,2	142	286	70,1	118	152	77,0	123	113
23.	54,4	92	254	62,2	72	104	45,4	63	90
24.	-	-	176	22,8	-	60	11,5	-	80
25.	-	-	49	-	-	58	-	-	-
26.	32,1	-	102	16,7	15	51	18,5	19	42
27.	52 5	87	295	50,4	79	169	39,8	54	73
28.	32,8	18	52	35,0	13	56	28,1	16	89
29.	28,8	71	245	41,0	76	185	49,7	88	114
30.	31,9	124	402	24,6	109	250	18,5	120	138

TABLE XI

RaB in air; units $10^{-12} \mu C/cm^3$

Station Designations: Z Zugspitse 2964 m a.s.l.
~~W Wank 1780 m a.s.l.~~
G Garmisch-Partenkirchen 730 m a.s.l.

Measurement periods : a = 2150 - 0920, b = 0950 - 1220,
c = 1250 - 1620. (Central European Time)

Month: May 1971 ("No measurement" is denoted by: -)

	a			b			c		
	Z	W	G	Z	W	G	Z	W	G
1.	-	-	282	-	-	193	-	-	-
2.	-	-	203	-	-	190	-	-	-
3.	51,5	-	220	49,6	118	207	53,9	100	155
4.	67,6	91	220	70,0	98	195	92,6	95	194
5.	75,8	90	329	64,8	68	207	45,7	76	198
6.	39,3	64	299	53,1	49	140	61,4	79	110
7.	36,6	52	306	31,8	68	126	62,3	65	100
8.	30,3	-	429	37,3	-	317	26,4	-	223
9.	-	-	336	-	-	100	-	-	-
10.	49,2	-	395	65,6	130	247	32,7	47	144
11.	39,4	77	204	41,1	81	179	47,4	49	95
12.	28,5	56	185	49,0	53	68	53,0	80	103
13.	131,3	134	340	90,4	125	128	42,7	66	91
14.	35,9	29	260	13,6	8	128	28,0	61	139
15.	33,9	43	398	39,7	87	154	5233	73	81
16.	-	-	228	-	-	75	-	-	-
17.	19,5	111	172	34,9	45	113	52,3	86	117
18.	29,0	129	277	40,2	39	103	45,4	45	111
19.	23,0	50	150	44,8	52	79	67,5	54	97
20.	-	-	251	-	-	158	-	-	-
21.	58,0	128	203	62,8	94	94	44,1	27	73
22.	19,5	33	174	35,5	46	69	45,8	39	78
23.	-	-	213	-	-	159	-	-	-
24.	85,2	110	289	84,7	97	118	72,2	53	114
25.	71,5	70	168	57,6	74	116	45,9	69	112
26.	31,1	42	128	48,8	41	102	35,8	25	58
27.	25,7	29	190	40,5	15	153	55,2	39	144
28.	24,6	44	147	25,0	56	89	14,3	21	69
29.	19,7	24	111	33,2	23	78	30,7	35	80
30.	-	-	148	-	-	121	-	-	-
31.	-	-	308	-	-	145	-	-	-

TABLE XII

RaB in air; units 10^{-12} µC/cm^3

Station Designations: Z Zugspitze 2964 m a.s.l.
W Wank 1780 m a.s.l.
G Garmisch-Partenkirchen 730 m a.s.l.

Measurement periods : a = 2150 - 0920, b = 0950 - 1220,
c = 1250 - 1620. (Central European Time)

Month: June 1971 ("No measurement" is denoted by: -)

	a			b			c		
	Z	W	G	Z	W	G	Z	W	G
1.	25,7	101	450	25,7	89	165	21,0	75	104
2.	31,6	54	223	64,7	130	198	93,3	65	123
3.	54,8	102	368	87,3	98	158	97,6	78	142
4.	72,8	107	274	90,4	146	203	94,8	115	159
5.	42,4	83	201	47,4	68	96	72,2	49	97
6.	-	-	346	-	-	147	-	-	-
7.	26,9	62	251	22,7	40	150	21,6	70	113
8.	16,5	17	300	20,1	21	228	20,9	39	102
9.	30,1	47	299	32,4	47	193	47,6	65	96
10.	-	-	209	-	-	37	-	-	-
11.	34,4	32	121	10,0	12	54	30,2	10	55
12.	8,3	13	73	17,3	17	53	21,5	21	37
13.	-	-	169	-	-	39	-	-	-
14.	28,7	69	171	44,0	46	110	75,8	68	128
15.	60,6	80	99	12,4	4	29	2,0	5	27
16.	7,3	17	73	6,6	21	34	19,6	16	30
17.	-	-	150	-	-	67	-	-	-
18.	12,7	71	329	11,6	12	74	9,1	8	39
19.	-	26	206	5,9	7	91	1,3	13	89
20.	-	-	51	-	-	73	-	-	-
21.	-	39	110	-	14	43	-	12	48
22.	28,9	59	218	55,6	101	116	26,1	17	53
23.	44,4	58	111	42,5	37	81	43,5	32	76
24.	71,5	96	379	87,3	112	261	84,0	53	252
25.	40,3	40	391	48,1	93	187	71,8	71	96
26.	63,5	87	297	84,7	81	135	107,1	81	101
27.	-	-	61	-	-	55	-	-	-
28.	52,9	53	134	53,6	61	116	54,2	44	74
29.	5,1	9	26	7,2	11	25	6,9	8	33
30.	6,3	14	101	8,0	16	77	4,3	11	57

5. The Computer Program

PAGE 001

```
                    *
                    * BANK + ZUSSPITZE - TEMPS PROGRAMM *
                    *
0000                AN      ORG     X'0'
                    *
0000 00                     HLT
0001 66C186                 JMP/    BEG
     8000           SPE     SET     X'8000'
     8200           TAB     SET     X'8200'
     1801           NOF     SET     X'1801'
     1883           NGF     SET     X'1883'
     18D9           CAF     SET     X'18D9'
     18F1           CPS     SET     X'18F1'
     1678           ADF     SET     X'1678'
     1681           SBF     SET     X'1681'
     1733           MLF     SET     X'1733'
     17D1           DVF     SET     X'17D1'
     18C9           CDF     SET     X'18C9'
     197A           EDF     SET     X'197A'
                    *  SET - 8*
                    *
                    *
     1BA1           CPL     SET     X'1BA1'
     1BD6           COS     SET     X'1BD6'
     1AB4           POL     SET     X'1AB4'
     1AB6           EXN     SET     X'1AB6'
     1ABC           EXS     SET     X'1ABC'
     1ABA           EXB     SET     X'1ABA'
     1807           LGN     SET     X'1807'
     181E           LGB     SET     X'181E'
     183D           LGS     SET     X'183D'
                    *
                    * SPEICHERPLATZ ; NR.- 39 *
                    *
0004 0004           TF      DS      4
0008 0004           E       DS      4
000C 0004           RF      DS      4
0010 0004           S       DS      4
0014 0004           TV      DS      4
0018 0004           EPT     DS      4
001C 0004           GRE     DS      4
0020 0004           GRF     DS      4
0024 0004           GRS     DS      4
0028 0004           GRT     DS      4
002C 0004           GPT     DS      4
0030 0004           T       DS      4
0034 0004           P       DS      4
0038 0004           ET      DS      4
003C 0004           ETP     DS      4
0040 0004           PT      DS      4
0044 0004           PL      DS      4
0048 0004           ML      DS      4
004C 0004           VPM     DS      4
0050 0004           L       DS      4
0054 0004           PLO     DS      4
0058 0004           MLO     DS       4
005C 0004           IT      DS      4
0060 0004           INS     DS      4
0064 0004           INR     DS      4
```

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```
0068 0004           NBI     DS      4
006C 0004           BNA     DS      4
0070 0004           TB      DS      4
0074 0004           TI      DS      4
0078 0004           Z1      DS      4
007C 0008           ZTA     DS      8
007E 0008           ZEI     DS      8
0080 0008           PRE     DS      8
0088 0004           ZB      DS       4
0086 0004           AUS     DS      4
008A 0004           P1      DS      4
008E 0004           P2      DS      4
0092 0004           M1      DS      4
0096 0004           M2      DS      4
009A 0004           DIF     DS      4
009E 0004           DM      DS      4
00A2 0008           ZEM     DS      8
00A4 0008           TM      DS      8
00A6 0008           FM      DS      8
00A8 0008           KST     DC      X'0008'
00AA 0008           RM      DS      8
00AC 0008           KX      DS      8
00AE 0008           TTX     DS      8
00B0 0008           TPX     DS      8
00B2 0008           TLX     DS      8
00B4 0004           ESP     DS      4
00B8 0004           WO1     DS      4
00BE 000D           WO2     DS      13
00CB 0009           WO3     DS      9
00D4 0004           EWT     DS      4
00D8 0004           EW1     DS      4
00DC 0004           EW2     DS      4
00E0 0004           EW3     DS      4
00E4 0004           EW4     DS      4
00E8 0008           EWR     DS      8
00EA 0004           M       DS      4
00EE 0004           KL      DS      4
00F2 0004           MOE     DS      4
00F6 0004           LM      DS      4
00FA 0008           ASP     DS      8
00FC 0004           F       DS      4
                    *
                    *
                    *
0100 0000           SRK     DC      **                 ZEICHEN IN R/K
0102 87885E                 LDX=    A'SRK'
0105 4E                     TXA
0106 B78000                 SBA=    X'8000'
0109 F0FA                   STA     ASP
010B E7FFD8                 LDA=    X'FFD8'
010E 6E08C5                 RTJ/    MI8
0111 88AA                   STX     RX
0113 87885E                 LDX=    A'SRK'
0116 4E                     TXA
0117 B78000                 SBA=    X'8000'
011A F0FA                   STA     ASP
011C E7FFCB                 LDA=    X'FFCB'
011F 6E08C5                 RTJ/    MI8
0122 88AC                   STX     KX
```

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```
0184 63DA                   JMP*    SRK
                    *
                    *
                    *  EINLESEN VON R + K *
                    *
0186 00             BEG     HLT
0187 08                     RO1
0188 870000                 LDA=    0
018B F0FA                   STA     ASP
018D EF91                   LDV=    X'91'
018F 3800                   OBS     0,0
0131 3000           INO     IBS     0,0
0133 D7007F                 ANA=    X'7F'
0136 A70080                 ADA=    X'80'
0139 80FA                   LDX     ASP
013B FEAR5E                 STV/    SRK,X
013E 87008A                 LDX=    X'8A'
0141 17EE                   JAX     INO
0143 87008D                 LDX=    X'8D'
0146 17E9                   JAX     INO
0148 8700FF                 LDX=    X'FF'
014B 17E4                   JAX     INO
014D 8700A0                 LDX=    X'A0'
0150 17DF                   JAX     INO
0152 870083                 LDX=    X'83'
0155 1704                   JAX     ZEO
0157 70FA                   INX     ASP
0159 61D6                   JMP     INO
015B EF93           ZEO     LDV=    X'93'
015D 3800                   OBS     0,0
015F 6E0100                 RTJ/    SRK
                    *
                    * ANFANG , EINLESEN PER PART. *
                    *
0162 8700C1                 LDA=    X'C1'
0165 F60DAE                 STA/    CAS
0168 6E11B8                 RTJ/    CIT
016B 660338                 JMP/    SBX
016E 8700D4         BG1     LDA=    X'D4'
0171 F60DAE                 STA/    CAS
0174 6E11B8                 RTJ/    CIT
0177 6E1E6E                 RTJ/    BLX
017A 6E1E78                 RTJ/    BGX
017D 6601BC                 JMP/    TAB
0180 8700C6         BGP     LDA=    X'C6'
0183 F60DAE                 STA/    CAS
0186 6E11B8                 RTJ/    CIT
0189 6E188E                 RTJ/    BLT
018C 1003                   JOV     BG3-3
018E 66083D                 JMP/    TA3
0191 66038C                 JMP/    PA9-3
0194 8700CC         BG3     LDA=    X'CC'
0197 760DAE                 STA/    CAS
019A 6E11B8                 RTJ/    CIT
019D 6E188E                 RTJ/    BLT
01A0 1003                   JOV     BG4-3
01A2 66083D                 JMP/    TA3
```

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01A5 66038A                 JMP/    PAA-3
01A8 870080         BG4     LDA=    X'80'
01AB F60DAE                 STA/    CAS
01AE 6E11B8                 RTJ/    CIT
01B1 6E188E                 RTJ/    BLT
01B4 1003                   JOV     *+5
01B6 66083D                 JMP/    TA3
01B9 660186                 JMP/    BEG
                    *
                    *
                    * TRANSF. V. T,TF,M,P, IN TAB ;  NR - 48  *
                    *
01BC 870000         TAB     LDX=    0
01BF 887C                   STX     ZTA
01C1 08                     RO1
01C2 870008                 LDX=    8
01C5 88D4                   STX     ESP
01C7 80D4           SB0     LDX     ESP
01C9 09                     RO2
01CA EEA000                 LDV/    SPE,X
01CD 6E08E5                 RTJ/    MI3
01D0 FEA001                 STV/    TAB+1,X
01D3 6E08ED                 RTJ/    MI4
01D6 0B                     RO4
01D7 EEA008                 LDV/    SPE+8,X                 P
01DA 6E08F5                 RTJ/    MIP
01DD EEA006                 LDV/    SPE+6,X                 T
01E0 6E0808                 RTJ/    MIT
01E3 EEA00A                 LDV/    SPE+10,X
01E6 6E080F                 RTJ/    MTF                  TF
01E9 0A                     RO3
01EA EEA00E                 LDV/    SPE+14,X
01ED 6E061C                 RTJ/    MLP                     LP
01F0 EEA011                 LDV/    SPE+17,X                LM
01F3 6E0689                 RTJ/    MLM
01F6 08                     RO1
01F7 EEA014                 LDV/    SPE+20,X
01FA 88D4                   STX     ESP
01FC 6E2BD4                 RTJ/    CSA
01FF 171E                   JAX     SB1
0201 80D4                   LDX     ESP
0203 E69FFE                 LDA/    SPE-8,X
0206 807C                   LDX     ZTA
0208 6E2765                 RTJ/    ZUR
020B 6E0BCE                 RTJ/    BET
020E 6E8F50                 RTJ/    MAS
0211 61BA                   JMP     SB0
0213 6E8F73         SB1     RTJ/    MLE
0216 570000                 LDX=    0
0219 887C                   STX     ZTA
021B 6E0BCE                 RTJ/    BET
021E 6E07AF                 RTJ/    PRL
0221 FEAE                   STV     TTE
0223 6E07CA                 RTJ/    TPL
0226 FE2B0E                 STV/    TIY
0229 807C                   LDX     ZTA
022A EEA801                 LDV/    TAB+1,X
022E FEDA                   STV     WO1+8
0230 E7A8B0                 LDA=    X'A8B0'
```

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```
0233 F0B8                 STA   WO1
0235 6E0093               RTJ/  UP3
0238 F8AA                 STV   TX
023A 66027C               JMP/  SB7
023D 08          TA3      RO1
023E 870000               LDX=  0
0241 887C                 STX   ZTA
0243 870008               LDX=  8
0246 88DA                 STX   ZSP
0248 80DA        SB8      LDX   ZSP
[illegible]
024D 6E0006               RTJ/  CSA
0250 1703                 JAX   SB3
0252 6E0648               RTJ/  HIT
0255 61F1                 JMP   SB8
0257 6E0F73      SB3      RTJ/  MLE
025A 870000               LDX=  0
025D 887C                 STX   ZTA
025F 807C        DF1      LDX   ZTA
0261 6E0D31               RTJ/  PKB
0264 6E0CEC               RTJ/  PKI
0267 807C                 LDX   ZTA
0269 FEA831               STV/  TAB+49,X
026C 4E                   TXA
026D A7C063               ADA=  X'63'
0270 4C                   TAX
0271 E6A800               LDA/  TAB,X
0274 87A0A0               LDX=  X'A0A0'
0277 1FE6                 MAX   DF1
0279 6613A7               JMP/  VYS
                 *
                 * HP - NR -43 *
                 *
027C 6E0C8B      SB7      RTJ/  PG1            ZUERST NL+LAB
027F 6E1E97               RTJ/  PGX
0282 6E0B8A               RTJ/  PG8
0285 870000      SBC      LDX=  0
0288 887C                 STX   ZTA            1. REIHE V. TAB IN FL
028A 807C        SP1      LDX   ZTA
028C 6E07C4               RTJ/  TFL
028F 6E07AF               RTJ/  PFL
0292 6E07FC               RTJ/  LPF
0295 6E0811               RTJ/  LMF
0298 6E096A               RTJ/  OBF
029B 171D                 JAN   SC3
029D 6E07E0               RTJ/  TFF
02A0 E830                 LDV   T
02A2 F8DE                 STV   ZV1
02A4 6E0830               RTJ/  PC8
02A7 F838                 STV   ST                 ST
02A9 E80A                 LDV   TP
02AB F8DE                 STV   ZW1
02AD 6E0830               RTJ/  PC8
02B0 F83C                 STV   ZTF                ETF
02B2 6E0B8E               RTJ/  PC4             E,S,TV,RF
02B5 66095A               JMP/   PDE        EPT
02B8 6E09DF      SC3      RTJ/  PC5             //// IN Z,S ....
02BB 6E093C               RTJ/  PD3             PT
02BE 6EEEA1               RTJ/  PEX
```

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```
02C1 6E0ADA               RTJ/  PFT            IT
02C4 6E0B0B               RTJ/  PC4             IN PC4 WIRD N GER.
02C7 E07C                 LDX   ZTA            ALLE ERG. IN FL+LA. IN D
02C9 6E0C6C               RTJ/  ZTA
02CC 6E09CE               RTJ/  NZT
02CF 6E0CC8               RTJ/  TAE             OP ENDE V. TAB
02D2 61B6                 JMP   SP1
                 *
                 * HP : NR - 44 *
                 *
02D4 6E0D31      SP8      RTJ/  PNB
02D7 6E0CEC               RTJ/  PNI            AUS + DIF
02DA 6E0DA1               RTJ/  PNB
02DD 6E0D86               RTJ/  PNI
02E0 F830                 STV   T
02E2 6E0DAE               RTJ/  PN3
02E5 6E0D86               RTJ/  PNI
02E8 F80E        PR2      STV   E
02EA 6E0DC0               RTJ/  PN4
02ED 6E0D86               RTJ/  PNI
02F0 F810                 STV   S
02F2 6E0DDD               RTJ/  PN5
02F5 6E0D86               RTJ/  PNI
02F8 F80C                 STV   RF
02FA 6E0DEF               RTJ/  PN6
02FD 6E0D86               RTJ/  PNI
0300 F84C                 STV   PT
0302 6E0E01               RTJ/  PN7
0305 6E0E15               RTJ/  PII
0308 807C                 LDX   ZTA
030A E89E                 LDV   DN
030C FEA831               STV/  TAB+49,X
030F E830                 LDV   T
0311 FEA839               STV/  TAB+57,X
0314 E80E                 LDV   E
0316 FEA83D               STV/  TAB+61,X
0319 E810                 LDV   S
031B FEA841               STV/  TAB+65,X
031E E30C                 LDV   RF
0320 FEA845               STV/  TAB+69,X
0323 E840                 LDV   PT
0325 FEA849               STV/  TAB+73,X
0328 E886                 LDV   AUS
032A FEA857               STV/  TAB+87,X
032D E89A                 LDV   DIF
032F FEA85D               STV/  TAB+93,X
0332 6E0D73               RTJ/  TAF
0335 6608D4               JMP/  SP8
0338 870000      SBX      LDX=  0
033B 887C                 STX   ZTA
033D 0A                   RO3
033E EEA00F               LDV/  SPE+15,X
0341 6E067F               RTJ/  UP1
0344 08                   RO1
0345 EEA00E               LDV/  SPE+14,X
0348 6E068C               RTJ/  UP2
034B 6E0693               RTJ/  UP3
034E 6E0886               RTJ/  DZE
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0351 F8FC                 STV   F
0353 66048C               JMP/  SR7
0356 E6EBAE      SP5      LDA/  CAE
0359 870004               LDX=  X'0004'
035C 1703                 MAX   *+3
035E 6E18F0               RTJ/  PRI
                 *
                 * HP : NR - 45 *
                 *
0361 6EEBA7               RTJ/  PNX
0364 887C                 STX   ZTA
0366 6E0ED0      SPX      RTJ/  PN2            ANFANG FL IN DER TAB
0369 1008                 JOV   SP6
036B 61F9                 JMP   SPX
036D 870004      SP6      LDX=  4
0370 887C                 STX   ZTA
0372 6E0ED0               RTJ/  PN2
0375 1008                 JOV   SP7
0377 61F9                 JMP   SP6+5
0379 870000      SP7      LDX=  0
037C 887C                 STX   ZTA
037E 6E0EF0               RTJ/  PN4
0381 1008                 JOV   SP8
0383 61F9                 JMP   SP7+5
0385 870004      SP8      LDX=  4
0388 887C                 STX   ZTA
038A 6E0EF0               RTJ/  PN4
038D 1008                 JOV   SP9
038F 61F9                 JMP   SP8+5
0391 870038      SP9      LDX=  38
0394 887C                 STX   ZTA
0396 6E0EF0               RTJ/  PN4
0399 1008                       SPA
039B 61F9                       SP9+5
039D 870038      SPA            56
03A0 887C                       ZTA
03A2 6E0EF0                     PN4
03A5 1008                       SPB
03A7 61F9                 JMP   SPA+5
03A9 870008      SPB      LDX=  8
03AC 887C                 STX   ZTA
03AE 6E0EF0               RTJ/  PN4
03B1 1008                 JOV   SPC
03B3 61F9                 JMP   SPB+5
03B5 870063      SPC      LDX=  99
03B8 887C                 STX   ZTA
03BA 6E0F0F               RTJ/  PN9
03BD 1008                 JOV   SPD
03BF 61F9                 JMP   SPC+5
03C1 870000      SPD      LDX=  0
03C4 887C                 STX   ZTA
03C6 6EEE7B               RTJ/  HIP
03C9 1008                 JOV   SPF
03CB 61F9                 JMP   SPD+5
03CD 870067      SPF      LDX=  103        G+T
03D0 887C                 STX   ZTA
03D2 6E0F85               RTJ/  PIN
03D5 1008                 JOV   SPF
03D7 61F9                 JMP   SPF+5
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03D9 87006B      SPF      LDX=  107     GRE
03DC 887C                 STX   ZTA
03DE 6E0F85               RTJ/  PIN
03E1 1008                 JOV   SR1
03E3 61F9                 JMP   SPF+5
03E5 87006F      SR1      LDX=  111     GRS
03E8 887C                 STX   ZTA
03EA 6E0F85               RTJ/  PIN
03ED 1008                 JOV   SR8
03EF 61F9                 JMP   SR1+5
03F1 870073      SR8      LDX=  115     GRF
03F4 887C                 STX   ZTA
03F6 6E0F85               RTJ/  PIN
03F9 1008                 JOV   SR3
03FB 61F9                 JMP   SR8+5
03FD 870077      SR3      LDX=  119     GPT
0400 887C                 STX   ZTA
0402 6E0F85               RTJ/  PIN
0405 1008                 JOV   SR4
0407 61F9                 JMP   SR3+5
0409 870063      SR4      LDX=  99
040C 887C                 STX   ZTA
040E 6E0FAA               RTJ/  PTN
0411 1008                 JOV   SR5
0413 61F9                 JMP   SR4+5
0415 870063      SR5      LDX=  99
0418 887C                 STX   ZTA
041A 6E0F6E               RTJ/  PGM
041D 1008                 JOV   SR6
041F 61F9                 JMP   SR5+5
0421 870063      SR6      LDX=  99
0424 887C                 STX   ZTA
0426 6E0F89               RTJ/  PGM
0429 6E1817               RTJ/  RUP
                 *
                 * HP : NR - 46 *
                 *
042C 08          SR7      RO1                 ANFANG - PRINT
042D 870000               LDX=  0
0430 6E1170               RTJ/  VRZ
0433 6F1195               RTJ/  PRS
0436 EFAD                 LDV=  X'AD'         '-'
0438 6E8BF8               RTJ/  OUT
043B 6E1195               RTJ/  PRS
043E 6E1195               RTJ/  PRS
0441 6E1195               RTJ/  PRS
0444 6E1195               RTJ/  PRS
0447 870006               LDX=  6
044A 6E117E               RTJ/  ZWR
044D 870008               LDX=  5
0450 6E1195               RTJ/  PRS
0453 6E1195               RTJ/  PRS
0456 EFAE                 LDV=  X'AE'        '.'
0458 6E8BF8               RTJ/  OUT
045B 6E1195               RTJ/  PRS
045E 6E1195               RTJ/  PRS
0461 EFAE                 LDV=  X'AE'
0463 6E8BF8               RTJ/  OUT
0466 EFB1                 LDV=  X'B1'
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0468 6E8BF8               RTJ/  OUT
046B EF20                 LDV=  X'B0'
046D 6E8BF8               RTJ/  OUT
0470 EFB7                 LDV=  X'B7'
0472 6E8BF8               RTJ/  OUT
0475 6E1195               RTJ/  PRS
0478 870007               LDX=  7
047B 6E117E               RTJ/  EVR
[illegible]
0481 6E1195               RTJ/  PRS
0484 6E1195               RTJ/  PRS
0487 EFAE                 LDV=  X'AE'
0489 6E8BF8               RTJ/  OUT
048C 6E1195               RTJ/  PRS
048F 6E1195               RTJ/  PRS
0492 870001               LDX=  1
0495 6E117E               RTJ/  EVR
0498 EFD5                 LDV=  X'D5'          'U'
049A 6E8BF8               RTJ/  OUT
049D EFC8                 LDV=  X'C8'          H
049F 6E8BF8               RTJ/  OUT
04A2 EFD2                 LDV=  X'D2'          R
04A4 6E8BF2               RTJ/  OUT
04A7 6E1170               RTJ/  VRE
04AA 6E1170               RTJ/  VRE
04AD 6E1170               RTJ/  VRE
04B0 87000D               LDX=  13
04B3 EEA446       PA1     LDV/  AN1,X
04B6 6E8BF8               RTJ/  OUT
04B9 45                   DCX
04BA 1DF7                 NXN   PA1
04BC 6E1170               RTJ/  VRE
04BF 641844               JMP/  VRA
04C2 6E1019       R1U     RTJ/  K01
04C5 6E10CB       SK1     RTJ/  PT1            PRT 1.TEIL TAB IN HN
04C8 6E05CE               RTJ/  NET
04CB EEA800               LDV/  TAB,X
04CE 87FFA0               LDX=  X'FFA0'
04D1 1708                 JAX   SK8
04D3 6170                 JMP   SK1
04D5 6E1170       SK8     RTJ/  VRE
04D8 6E1049               RTJ/  K08            KOPF 8
04DB 6E1108               RTJ/  PT8            PRINT 8. TEIL TAB IN HN
04DE 6E05CE               RTJ/  NET
04E1 EEA800               LDV/  TAB,X
04E4 87FFA0               LDX=  X'FFA0'
04E7 1708                 JAX   SK3
04E9 6170                 JMP   SK8+6
04EB 6E1170       SK3     RTJ/  VRE
04EE 87000D               LDX=  13
04F1 EEAA61       PA8     LDV/  AN8,X               HP-T
04F4 6E8BF8               RTJ/  OUT
04F7 45                   DCX
04F8 1DF7                 NXN   PA8
04FA 6E1170               RTJ/  VRE
04FC 64184A               JMP/  VRB
0500 6E1019       R8U     RTJ/  K01
0503 6E10CB       SK6     RTJ/  PT1
0506 6E05CE               RTJ/  NET
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0509 EEA800               LDV/  TAB,X
050C 87FFA0               LDX=  X'FFA0'
050F 1708                 JAX   SN5
0511 6170                 JMP   SN6
                  *
                  *
                  * HP : PRINT FORTSETZUNG 3 NR. 47 *
                  *
0513 6E1170       SN5     RTJ/  VRE
0516 6E1049               RTJ/  K08
0519 6E1108               RTJ/  PT3
051C 6E05CE               RTJ/  NET
051F EEA800               LDV/  TAB,X
0522 87FFA0               LDX=  X'FFA0'
0525 1708                 JAX   *+4
0527 6170                 JMP   SN5+6
0529 6E1170               RTJ/  VRE
052C 87000F               LDX=  15
052F EEAA5F       PA9     LDV/  AN9,X
0532 6E8BF8               RTJ/  OUT
0535 45                   DCX
0536 1DF7                 NXN   PA9
0538 6E1170               RTJ/  VRE
053B 641850               JMP/  VRC
053E 6E1019       R3U     RTJ/  K01
0541 6E10CB       SN9     RTJ/  PT1
0544 6E05CE               RTJ/  NET
0547 EEA800               LDV/  TAB,X
054A 87FFA0               LDX=  X'FFA0'
054D 1708                 JAX   SN8
054F 6170                 JMP   SN9
0551 6E1170       SN8     RTJ/  VRE
0554 6E1049               RTJ/  K08
0557 6E1108       SNA     RTJ/  PT3
055A 6E05CE               RTJ/  NET
055D EEA800               LDV/  TAB,X
0560 87FFA0               LDX=  X'FFA0'
0563 1708                 JAX   *+4
0565 6170                 JMP   SNA
0567 6E1170               RTJ/  VRE
056A 870011               LDX=  17
056D EEAA7F       PAA     LDV/  ANA,X
0570 6E8BF8               RTJ/  OUT
0573 45                   DCX
0574 1DF7                 NXN   PAA
0576 6E1170               RTJ/  VRE
0579 641856               JMP/  VRD
057C 6E1019       R4U     RTJ/  K01
057F 6E10CB       SKD     RTJ/  PT1
0582 6E05CE               RTJ/  NET
0585 EEA800               LDV/  TAB,X
0588 87FFA0               LDX=  X'FFA0'
058B 1708                 JAX   SKC
058D 6170                 JMP   SKD
058F 6E1170       SKC     RTJ/  VRE
0592 6E1049               RTJ/  K08
0595 6E1108       SKE     RTJ/  PT3
0598 6E05CE               RTJ/  NET
059B EEA800               LDV/  TAB,X
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059E 87FFA0               LDX=  X'FFA0'
05A1 1708                 JAX   SKB
05A3 6170                 JMP   SKE
05A5 66189C       SKB     JMP/  VRE
                  *
                  *
                  * UP-10
                  *
05A8 0000         SUE     DC    **
05AA 08                   R01
05AB F07E                 STA   ES1
05AD 80FA         SUN     LDX   ASP
05AF EEA000               LDV/  SPE,X
05B2 807E                 LDX   ES1
05B4 1704                 JAX   SU1
05B6 70FA                 IVN   ASP
05B8 61F3                 JMP   SUN
05BA 63EC         SU1     JMP*  SUE
                  *
05BC 0000         HI1     DC    **
05BE 870000               LDX=  0
05C1 88FA                 STX   ASP
05C3 63F7                 JMP*  HI1
                  *
05C5 0000         HI8     DC    **
05C7 6E05A8               RTJ/  SUE
05CA 80FA                 LDX   ASP
05CC 63F7                 JMP*  HI8
                  *
                  *
                  * UP-8 : NAECHSTE ZEILE IN TAB + SPE *
                  *
05CE 0000         NET     DC    **
05D0 B07C                 LDA   ZTA
05D2 A70063               ADA=  F'99'
05D5 F07C                 STA   ZTA
05D7 AC                   TAX
05D8 63F4                 JMP*  NET
                  *
05DA 0000         NES     DC    **
05DC B0B4                 LDA   ESP
05DE A70014               ADA=  F'20'
05E1 F0B4                 STA   ESP
05E3 63F5                 JMP*  NES
                  *
05E5 0000         HI3     DC    **
05E7 88B4                 STX   ESP
05E9 807C                 LDX   ZTA
05EB 63F8                 JMP*  HI3
                  *
05ED 0000         HI4     DC    **
05EF 887C                 STX   ZTA
05F1 80B4                 LDX   ESP
05F3 63F8                 JMP*  HI4
                  *
                  *
                  * UP - 3 : HILFSPRO. *
                  *
05F5 0000         HIP     DC    **
```

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05F7 6E05E5               RTJ/  HI3
05FA FEA805               STV/  TAB+5,X
05FD 6E05ED               RTJ/  HI4
0600 63F3                 JMP*  HIP
                  *
0602 0000         HIT     DC    **
0604 6E05E5               RTJ/  HI3
0607 FEA809               STV/  TAB+9,X
060A 6E05ED               RTJ/  HI4
060D 63F3                 JMP*  HIT
                  *
060F 0000         HTP     DC    **
0611 6E05E5               RTJ/  HI3
0614 FEA80D               STV/  TAB+13,X
0617 6E05ED               RTJ/  HI4
061A 63F3                 JMP*  HTP
                  *
061C 0000         HLP     DC    **
061E 6E05E5               RTJ/  HI3
0621 FEA825               STV/  TAB+37,X
0624 6E05ED               RTJ/  HI4
0627 63F3                 JMP*  HLP
                  *
0629 0000         HLH     DC    **
062B 6E05E5               RTJ/  HI3
062E FEA828               STV/  TAB+40,X
0631 6E05ED               RTJ/  HI4
0634 63F3                 JMP*  HLH
                  *
                  *
                  * UP-4 : HILFSPRO. *
                  *
                  *
0636 0000         HI6     DC    **
0638 08                   R04
0639 EEA000               LDV/  SPE,X               P
063C 6E05F5               RTJ/  HIP
063F EEA004               LDV/  SPE+4,X
0642 6E0602               RTJ/  HIT                     T'1
0645 EEA008               LDV/  SPE+8,X                TP
0648 6E060F               RTJ/  HTP
064B 0A                   R03
064C EEA00C               LDV/  SPE+12,X
064F 6E061C               RTJ/  HLP                     LP11
0652 EEA00F               LDV/  SPE+15,X                LH
0655 6E0629               RTJ/  HLH
0658 E8FFFE               LDA/  SPE-2,X
065B 807C                 LDX   ZTA
065D 6EEF9B               RTJ/  SHR
0660 08                   R01
0661 80B4                 LDX   ESP
0663 EEA018               LDV/  SPE+18,X
0666 63CE                 JMP*  HI6
                  *
0668 0000         HI7     DC    **
066A 6E05DA               RTJ/  NES
066D 6E05CE               RTJ/  NET
0670 63F6                 JMP*  HI7
                  *
```

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                        *
                        *
                        * UP-6: V01 VOLL MIT 4,2:ODER VORZEI. *
                        *
0673 0000               UP0     DC      **
0675 0B                         RO4
0676 F8BA                       STV     V01+2
0677 09                         RO2
0678 E7AB80                     LDA*    X'AB80'
067B F8B8                       STV     V01
067D 6373                       JMP*    UP0
                        *
067F 0000               UP1     DC      **
0681 0A                         RO3
0682 F8B8                       STV     V01+3
0684 EFAB80B0                   LDV*    X'AB80BC'
0688 F8B8                       STV     V01
068A 6374                       JMP*    UP1
                        *
068C 0000               UP8     DC      **
068E 08                         RO1
068F F8B8                       STV     V01
0691 63F9                       JMP*    UP8
                        *
                        * UP2 : IN FL *
                        *
0693 0000               UP3     DC      **
0695 09                         RO2
0696 8700B8                     LDX*    A'V01'
0699 6E1BB6                     RTJ/    CDB
069C 6E1BD4                     RTJ/    CEF
069F 0B                         RO4
06A0 63F1                       JMP*    UP3
                        *
                        * UP4 : TRANSF. IN DEZ *
                        *
06A2 0000               UP4     DC      **
06A4 87AFAF                     LDX*    X'AFAF'
06A7 1F08                       NAX     *+10
06A9 0A                         RO3
06AA EFAFAFAF                   LDV*    X'AFAFAF'
06AE 66374F                     JMP/    AC4
06B1 0B                         RO4
06B2 8700BE                     LDX*    A'V08'
06B5 6E197A                     RTJ/    EDF
06B8 6385                       JMP*    UP4
                        *
                        *
                        * DEZ : CONV. V. EDF IN DEZ-FORM *
                        *
06BA 0000               DEZ     DC      **
06BC 6E06A2                     RTJ/    UP4
06BF 08                         RO1
06C0 E8C8                       LDV     V08+10
06C2 F8C9                       STV     V08+11
06C4 09                         RO2
06C5 E8C9                       LDV     V08+11
06C7 87ABB6                     LDX*    X'ABB6'
06CA 1F0F                       NAX     DX8
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06CC 6E07A6                     RTJ/    DE1
06CF 0B                         RO4
06D0 E8C0                       LDV     V08+2
06D2 F8CC                       STV     V03+1
06D4 E8C4                       LDV     V08+6
06D6 F8D0                       STV     V03+5
06D8 660791                     JMP/    DX7
06DB 87ABB5             DX8     LDX*    X'ABB5'
06DE 1731                       JAX     DX0
06E0 87ABB4                     LDX*    X'ABB4'
06E3 173F                       JAX     DX1
06E5 87ABB3                     LDX*    X'ABB3'
06E8 174F                       JAX     DX2
06EA 87ABB8                     LDX*    X'ABB8'
06ED 175F                       JAX     DX3
06EF 87ABB1                     LDX*    X'ABB1'
06F2 176F                       JAX     DX4
06F4 87AB80                     LDX*    X'AB80'
06F7 177A                       JAX     DX5
06F9 87AD81                     LDX*    X'AD81'
06FC 1710                       JAX     D6X
06FE 6E07A6                     RTJ/    DE1
0701 E8C0                       LDV     V08+8
0703 F8D3                       STV     V03+8
0705 870007                     LDX*    7
0708 6E0797                     RTJ/    UDE
070B 660791                     JMP/    DX7
070E 660783             D6X     JMP/    DX6
0711 6E07A6             DX0     RTJ/    DE1
0714 EFB0                       LDV*    X'B0'
0716 F8D3                       STV     V03+8
0718 0B                         RO4
0719 E8C0                       LDV     V08+2
071B F8CC                       STV     V03+1
071D 0A                         RO3
071E E8C4                       LDV     V08+6
0720 F8D0                       STV     V03+5
0722 618D                       JMP     DX7
0724 6E07A6             DX1     RTJ/    DE1
0727 870001                     LDX*    1
072A 6E0797                     RTJ/    UDE
072D 0B                         RO4
072E E8C0                       LDV     V08+8
0730 F8CD                       STV     V03+2
0732 0A                         RO3
0733 E8C4                       LDV     V08+6
0735 F8D1                       STV     V03+6
0737 6158                       JMP     DX7
0739 6E07A6             DX2     RTJ/    DE1
073C 870002                     LDX*    2
073F 6E0797                     RTJ/    UDE
0742 0B                         RO4
0743 E8C0                       LDV     V08+8
0745 F8CE                       STV     V03+3
0747 09                         RO2
0748 E8C4                       LDV     V08+6
074A F8D2                       STV     V03+7
074C 6143                       JMP     DX7
074E 6E07A6             DX3     RTJ/    DE1
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0751 870003                     LDX*    3
0754 6E0797                     RTJ/    UDE
0757 0B                         RO4
0758 E8C0                       LDV     V08+8
075A F8CF                       STV     V03+4
075C 08                         RO1
075D E8C4                       LDV     V08+6
075F F8D3                       STV     V03+8
0761 612E                       JMP     DX7
0763 6E07A6             DX4     RTJ/    DE1
0766 870004                     LDX*    4
0769 6E0797                     RTJ/    UDE
076C 0B                         RO4
076D E8C0                       LDV     V08+8
076F F8D0                       STV     V03+5
0771 611E                       JMP     DX7
0773 6E07A6             DX5     RTJ/    DE1
0776 870005                     LDX*    5
0779 6E0797                     RTJ/    UDE
077C 0A                         RO3
077D E8C0                       LDV     V08+8
077F F8D1                       STV     V03+6
0781 6108                       JMP     DX7
0783 6E07A6             DX6     RTJ/    DE1
0786 870006                     LDX*    6
0789 6E0797                     RTJ/    UDE
078C 09                         RO2
078D E8C0                       LDV     V08+8
078F F8D2                       STV     V03+7
0791 6E18A6             DX7     RTJ/    ARD
0794 6706BA                     JMP*    DEZ
                        *
                        * UP-8 : HILFSPRO. *
                        *
0797 0000               UDE     DC      **
0799 08                 DE2     RO1
079A EFB0                       LDV*    X'B0'
079C FE80CB                     STV/    V03,X
079F 45                         DCX
07A0 1308                       JXE     DE0
07A2 6173                       JMP     DE2
07A4 63F1               DE0     JMP*    UDE
                        *
07A6 0000               DE1     DC      **
07A8 08                         RO1
07A9 E8BE                       LDV     V08
07AB F8CB                       STV     V03
07AD 63F7                       JMP*    DE1
                        *
                        *
                        * UP-9 : DATEN IN FL *
                        *
07AF 0000               PFL     DC      **
07B1 0B                         RO4
07B2 E07C                       LDX     ZTA
07B4 EEAB05                     LDV/    TAB+5,X
07B7 6E0673                     RTJ/    UP0
07BA 6E0693                     RTJ/    UP3
07BD 6E08B6                     RTJ/    DZE
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```
07C0 F834                       STV     P
07C2 63EB                       JMP*    PFL
                        *
07C4 0000               TPL     DC      **
07C6 0A                         RO3
07C7 E07C                       LDX     ZTA
07C9 EEAB0A                     LDV/    TAB+10,X
07CC 6E067F                     RTJ/    UP1
07CF 08                         RO1
07D0 EEAB09                     LDV/    TAB+9,X
07D3 6E068C                     RTJ/    UP8
07D6 6E0693                     RTJ/    UP3
07D9 6E08B6                     RTJ/    DZE
07DC F830                       STV     T
07DE 63E4                       JMP*    TPL
                        *
07E0 0000               TFF     DC      **
07E2 0A                         RO3
07E3 E07C                       LDX     ZTA
07E5 EEAB0E                     LDV/    TAB+14,X
07E8 6E067F                     RTJ/    UP1
07EB 08                         RO1
07EC EEAB0D                     LDV/    TAB+13,X
07EF 6E068C                     RTJ/    UP8
07F2 6E0693                     RTJ/    UP3
07F5 6E08B6                     RTJ/    DZE
07F8 F804                       STV     TF
07FA 63E4                       JMP*    TFF
                        *
07FC 0000               LPF     DC      **
07FE 0A                         RO3
07FF E07C                       LDX     ZTA
0801 EEAB25                     LDV/    TAB+37,X
0804 6E067F                     RTJ/    UP1
0807 6E0693                     RTJ/    UP3
080A 6E08B6                     RTJ/    DZE
080D F844                       STV     PL
080F 63ED                       JMP*    LPF
                        *
0811 0000               LNF     DC      **
0813 0A                         RO3
0814 E07C                       LDX     ZTA
0816 EEAB28                     LDV/    TAB+40,X
0819 6E067F                     RTJ/    UP1
081C 6E0693                     RTJ/    UP3
081F 6E08B6                     RTJ/    DZE
0822 F848                       STV     NL
0824 63ED                       JMP*    LNF
                        *
0826 0000               DZE     DC      **
0828 87BA95                     LDX*    A'NB'
082B 6E17C1                     RTJ/    DVF
082E 63F6                       JMP*    DZE
                        *
                        *
                        * FORMEL  ET , NR.10 *
                        *
0830 0000               PCE     DC      **
0832 E07C                       LDX     ZTA
```

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0834 08                 RO1
0835 E2A80D             LDA/  TAB+13,X
0838 87FFAD             LDX=  X'FFAD'
083B 1781               JAX   SC1
083D 0B                 RO4
083E E8D8               LDV   ZV1
0840 878A95             LDX=  A'K8'
0843 6E1733             RTJ/  MLF
0846 878AA1             LDX=  A'K8'       8373
[illegible]
084C F8D4               STV   ZVT
084E E8D8               LDV   ZV1
0850 878A9D             LDX=  A'KA'       75
0853 6E1733             RTJ/  MLF
0856 8700D4             LDX=  A'ZVT'
[illegible]             RTJ/  DVF
085C 6117               JMP   SC8
085E 0B          SC1    RO4
085F E8D8               LDV   ZV1
0861 878A95             LDX=  A'K8'
0864 6E1733             RTJ/  MLF
0867 878AA9             LDX=  A'K7'       6655
086A 6E1678             RTJ/  ADF
086D F8D4               STV   ZVT
086F E8D8               LDV   ZV1
0871 878AA5             LDX=  A'K6'       95
0874 6E1733             RTJ/  MLF
0877 8700D4             LDX=  A'ZVT'
087A 6E17D1             RTJ/  DVF
087D 6E1A9C      SC8    RTJ/  ZXD
0880 878AC1             LDX=  A'KD'
0883 6E1733             RTJ/  MLF
0886 878AF1             LDX=  A'K9'       1001  KD=611
0889 6E17D1             RTJ/  DVF
088C 63A8               JMP=  PC8
*
*
* FORMEL F. E,S,RF,TV , KR = 11 *
*
088E 0000        PC4    DC    **
0890 0B                 RO4
0891 E830               LDV   T
0893 870004             LDX=  A'TF'
0896 6E1681             RTJ/  SBF
0899 878A91             LDX=  A'K1'       K
089C 6E1733             RTJ/  MLF
089F 870034             LDX=  A'P'
08A2 6E1733             RTJ/  MLF
08A5 878A99             LDX=  A'K3'
08A8 6E17D1             RTJ/  DVF         K3=10064
08AB F8D8               STV   ZV1
08AD E83C               LDV   STF
08AF 8700D8             LDX=  A'ZV1'
08B2 6E1681             RTJ/  SBF
08B5 F808               STV   E
08B7 870038             LDX=  A'ET'       RF
08BA 6E17D1             RTJ/  DVF
08BD 872AB1             LDX=  A'K9'       100
08C0 6E1733             RTJ/  MLF
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08C3 F80C               STV   RF
08C5 E808               LDV   E           3
08C7 878AB5             LDX=  A'KA'       378
08CA 6E1733             RTJ/  MLF
08CD 878AB9             LDX=  A'KB'       1,00
08D0 6E17D1             RTJ/  DVF
08D3 F8D8               STV   ZV1
08D5 E834               LDV   W
08D7 8700D8             LDX=  A'ZV1'
08DA 6E1681             RTJ/  SBF
08DD F8D8               STV   ZV1
08DF E808               LDV   E
08E1 878AAD             LDX=  A'K8'       688
08E4 6E1789             RTJ/  MLF
08E7 8700D8             LDX=  A'ZV1'
08EA 6E17D1             RTJ/  DVF
08ED F810               STV   S
08EF 87148A             LDX=  A'K8K'
08F2 6E1733             RTJ/  MLF
08F5 878AB9             LDX=  A'KB'       1000
08F8 6E17D1             RTJ/  DVF
08FB 878ABD             LDX=  A'KC'       1
08FE 6E1678             RTJ/  ADF
0901 6E8BC3             RTJ/  MUS
0904 8708EE             JMP=  PC4
*
*
* PD1 : PT-FORMEL,NR 18 *
*
*
0907 0000        PD1    DC    **
0909 E88AB9             LDV/  KB          1000
090C 870034             LDX=  A'P'
090F 6E17D1             RTJ/  DVF
0912 6E1B07             RTJ/  LGN
0915 878A85             LDX=  A'K8'       6
0918 6E1733             RTJ/  MLF
091B 878AC9             LDX=  A'KF'       7
091E 6E17D1             RTJ/  DVF
0921 6E1A86             RTJ/  EXN
0924 F8D8               STV   ZV1         1000/P . E-18/7
0926 870008             LDX=  A'E'
0929 6E1733             RTJ/  MLF
092C 878ACD             LDX=  A'KK1'      1870
092F 6E1733             RTJ/  MLF
0932 870034             LDX=  A'P'
0935 6E17D1             RTJ/  DVF
0938 F8D4               STV   ZVT         DT
093A 63C8               JMP=  PD1
*
*  PT *
*
093C 0000        PE3    DC    **
093E 6E0907             RTJ/  PD1
0941 E88AE1             LDV/  KN8         8738
0944 878A95             LDX=  A'K8'       10
0947 6E17D1             RTJ/  DVF
094A 870030             LDX=  A'T'
094D 6E1678             RTJ/  ADF
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0950 8700D8             LDX=  A'ZV1'
0953 6E1733             RTJ/  MLF
0956 F840               STV   PT
0958 6328               JMP=  PD3
*
*  EPT - FORMEL *
*
095A 6E093C      PD8    RTJ/  PD3
095D E840               LDV   PT
095F 8700D4             LDX=  A'ZVT'
0962 6E1678             RTJ/  ADF
0965 F818               STV   EPT
0967 6408E8             JMP/  SC3+3
*
*
* OB FEUCHTIGKEIT VORHANDEN *
*
096A 0000        OBF    DC    **
096C 807C               LDX   ETA
096E E6A80D             LDA/  TAB+13,X
0971 87AFAF             LDX=  X'AFAF'
0974 63F4               JMP=  OBF
*
* L- EICHWERTE IN PL  *
*
0976 0000        EL1    DC    **
0978 0A                 RO3
0979 E854               LDV   PLO
097B 6E067F             RTJ/  UP1
097E 6E0693             RTJ/  UP3
0981 6E08B6             RTJ/  DZE
0984 F8D8               STV   ZV1
0986 0A                 RO3
0987 E858               LDV   NLO
0989 6E067F             RTJ/  UP1
098C 6E0693             RTJ/  UP3
098F 6E08B6             RTJ/  DZE
0992 F8D4               STV   ZVT
0994 63E0               JMP=  EL1
*
*
* PE1 : FORMEL  +L,-L, +/+ , L  ;  NR. 14 *
*
0996 0000        PE1    DC    **
0998 6E0976             RTJ/  EL1
099B E844               LDV   PL
099D 6E09CF             RTJ/  MID
09A0 8700D8             LDX=  A'ZV1'
09A3 6E17D1             RTJ/  DVF
09A6 F844               STV   PL
09A8 E848               LDV   NL
09AA 6E09CF             RTJ/  MID
09AD 8700D4             LDX=  A'ZVT'
09B0 6E17D1             RTJ/  DVF
09B3 F848               STV   NL
09B5 870044             LDX=  A'PL'
09B8 6E1678             RTJ/  ADF
09BB F850               STV   L
09BD E844               LDV   PL
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09BF 870048             LDX=  A'NL'
09C2 6E17D1             RTJ/  DVF
09C5 878A95             LDX=  A'K8'
09C8 6E1733             RTJ/  MLF
09CB F840               STV   VPN
09CD 63C7               JMP=  PE1
*
09CF 0000        MID    DC    **
09D1 878AD5             LDX=  A'KK3'      443
09D4 6E1733             RTJ/  MLF
09D7 878AB1             LDX=  A'K9'       100
09DA 6E17D1             RTJ/  DVF
09DD 63F0               JMP=  MID
*
*
* PC8 : IN E,S,RF,TV,EPT,GR-E,S,-RF  '////  ' TRANSF.
*
09DF 0000        PC8    DC    **
09E1 87001J             LDX=  19
09E4 08                 RO1
09E5 E7AF        SC4    LDV=  X'AF'
09E7 FE8008             STV/  E,X
09EA 05                 DCX
09EB 1DFA               NXN   SC4
09ED 0B                 RO4
09EE 632F               JMP=  PC8
*
* PF1 : FORMEL INS ; NR. ....... 15 *
*
09F0 0000        PF1    DC    **
09F2 0B                 RO4
09F3 E8D4               LDV   ZVT         ...Z IN KM
09F5 878ADD             LDX=  A'KK5'      408
09F8 6E1733             RTJ/  MLF
09FB 878AB9             LDX=  A'KB'       1000
09FE 6E17D1             RTJ/  DVF
0A01 6E1A86             RTJ/  EXN
0A04 878AD9             LDX=  A'KK4'      1849
0A07 6E1733             RTJ/  MLF
0A0A 878AB9             LDX=  A'KB'
0A0D 6E17D1             RTJ/  DVF
0A10 F860               STV   INS
0A12 63DC               JMP=  PF1
*
*
* PF8 : FORMEL INR  ; NR.16 *
*
0A14 0000        PF8    DC    **
0A16 0B                 RO4
0A17 E8E4               LDV   ZV4         ... Z8
0A19 8700E0             LDX=  A'ZV3'      ... Z1
0A1C 6E1681             RTJ/  SBF
0A1F F8E4               STV   ZV4
0A21 E8DC               LDV   ZV8
0A23 8700D8             LDX=  A'ZV1'
0A26 6E1681             RTJ/  SBF
0A29 878AE1             LDX=  A'KK6'      ...80
0A2C 6E17D1             RTJ/  DVF
0A2F 8700E4             LDX=  A'ZV4'
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```
0A30 6E17D1          RTJ/  DVF
0A33 F8DC            STV   ZV8          ... K81
0A37 870004          LDX=  A'ZVT'
0A3A 6E1733          RTJ/  MLF
0A3D F8D4            STV   ZVT
0A3F E8D8            LDV   ZV1
0A41 87EAE1          LDX=  A'KK6'
0A44 6E17D1          RTJ/  DVF
[illegible]          STV      ZV1        ..D
0AA9 E8DC            LDV   ZV8
0A4B 8700E0          LDX=  A'ZV3'     Z1
0A4E 6E1733          RTJ/  MLF
0A51 F8E0            STV   ZV3        C
0A53 E8D4            LDV   ZVT
0A55 8700D8          LDX=  A'ZV1'      D
0A58 6E1678          RTJ/  ADF
0A5B 8700E0          LDX=  A'ZV3'       C
0A5E 6E1681          RTJ/  SBF
0A61 870040          LDX=  A'INS'
0A64 6E1678          RTJ/  ADF
0A67 F85C            STV   IT
0A69 EE8809          LDV/  K7K        39
0A6C 87EA91          LDX=  A'K8'
0A6F 6E17D1          RTJ/  DVF
0A72 F8D8            STV   ZV1
0A74 E85C            LDV   IT
0A76 8700D8          LDX=  A'ZV1'
0A79 6E1681          RTJ/  SBF
0A7C F85C            STV   IT
0A7E 6394            JMP=  PF8
                *
                *
                * PF3 : WELCHE Z1,Z2 WERDEN BENUTZT ;  NR. 17 *
                *
0A80 0000       PF3  DC    **
0A82 80AA            LDX   RX
0A84 44              INX
0A85 68E8            STX   ZVR
0A87 80E8       SF8  LDX   ZVR
0A89 09              R08
0A8A EEA000          LDV/  SPE,X
0A8D 807C            LDX   ZTA
0A8F CEAB01          CPV/  TAB+1,X
0A92 1009            JOV   SF1
0A94 E0E8            LDA   ZVR
0A96 A70007          ADA=  7
0A99 F0E8            STA   ZVR
0A9B 61EA            JMP   SF8
0A9D E0E8       FF1  LDA   ZVR          Z2-ZEILE
0A9F B70007          SBA=  7
0AA2 F0FA            STA   ASP
0AA4 63DA            JMP=  PF3             Z1-ZEILE IN ASP
                *
                *
                * DATEN Z1,Z2,RAD-1,RAD-2,Z IN FL ; NR. 18 *
                *
0AA6 0000       PF4  DC    **
0AA8 80FA            LDX   ASP
0AAA 6E0AEA          RTJ/  HIE
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```
0AAD F8E0            STV   ZV3          IN ZV3 IST Z1 IN KM
0AAF 80FA            LDX   ASP
0AB1 6E0AFE          RTJ/  HIF
0AB4 F8D8            STV   ZV1            RAD-1
0AB6 80E8            LDX   ZVX
0AB8 6E0AEA          RTJ/  HIE
0ABB F8E4            STV   ZV4          Z2 IN KM
0ABD 80E8            LDX   ZVX
[illegible]
0AC3 F8DC            STV   ZV8          RAD-2
0AC5 CA              R03
0AC6 807C            LDX   ZTA
0AC7 EEAB01          LDV/  TAB+1,X
0ACA 6E067F          RTJ/  UP1
0ACD 6E0693          RTJ/  UP3
0AD0 87EAB1          LDX=  A'K9'         100
0AD3 6E17D1          RTJ/   DVF
0AD6 F8D4            STV   ZVT
0AD8 63CC            JMP=   PF4          IN ZVT  IST Z IN KM
                *
0ADA 0000       PFT  DC    **
0ADC 6E0A80          RTJ/  PF3
0ADF 6E0AA6          RTJ/ . PF4
0AE2 6E0F00          RTJ/  PF1
0AE5 6E0A14          RTJ/  PF2
0AE8 6370            JMP=  PFT
                *
0AEA 0000       HIE  DC    **
0AEC 0A              R03
0AED EEA000          LDV/  SPE,X
0AF0 6E067F          RTJ/  UP1
0AF3 6E0693          RTJ/  UP3
0AF6 87EAB1          LDX=  A'K9'
0AF9 6E17D1          RTJ/  DVF
0AFC 63EC            JMP=  HIE
                *
0AFE 0000       HIF  DC    **
0B00 EEA003          LDV/  SPE+3,X
0B03 6E0678          RTJ/  UP0
0B06 6E0693          RTJ/  UP3
0B09 63F3            JMP=  HIF
                *
                *
                * PO4 : FORMEL FUER N ; NR. 19 *
                *
0B0B 0000       PO4  DC    **
0B0D 0B              R04
0B0E E45C            LDV   IT
0B10 87EAE1          LDX=  A'KK6'         50
0B13 6E1733          RTJ/  MLF
0B16 6E1B1E          RTJ/  LOD
0B19 F8D8            STV   ZV1
0B1B 87EAE5          LDX=  A'KK7'      455
0B1E 6E1733          RTJ/  MLF
0B21 87EAB9          LDX=  A'KB'
0B24 6E17D1          RTJ/   DVF
0B27 F8D4            STV   ZVT          A
0B29 EEEAE9          LDV/  KK8        15458
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```
0B2C 87EAB9          LDX=  A'KB'
0B2F 6E17D1          RTJ/  DVF
0B32 F8DC            STV   ZV8          B
0B34 E8D8            LDV   ZV1
0B36 87EAED          LDX=  A'KK9'        39
0B39 6E1733          RTJ/  MLF
0B3C 87EAB1          LDX=  A'K9'
0B3F 6E17D1          RTJ/  DVF
0B42 F8D8            STV   ZV1
0B44 EEEAF1          LDV/  KIK        8686; IN ZV1 IST Z
0B47 87EAB9          LDX=  A'KB'
0B4A 6E17D1          RTJ/  DVF
0B4D F8E4            STV   ZV4          D
0B4F E8D8            LDV   ZV1
0B51 8700E4          LDX=  A'ZV4'
0B54 6E1681          RTJ/  SBF
0B57 F8D8            STV   ZV1        Z-D
0B59 E850            LDV   L
0B5B 8700EE          LDX=  A'XL'
0B5E 6E1733          RTJ/  MLF
0B61 878B03          LDX=  A'K8K'       37184
0B64 6E1733          RTJ/  MLF
0B67 87EAB1          LDX=  A'K9'
0B6A 6E17D1          RTJ/  DVF
0B6D 6E1B07          RTJ/  LGN
0B70 8700D8          LDX=  A'ZV1'
0B73 6E1733          RTJ/  MLF
0B76 8700DC          LDX=  A'ZV8'
0B79 6E1678          RTJ/  ADF
0B7C 8700D4          LDX=  A'ZVT'
0B7F 6E1681          RTJ/  SBF
0B82 6E1A86          RTJ/  ZXN
0B85 F8EA            STV   N
0B87 670B0B          JMP=  PO4
                *
                *
                * FORMEL LAS ...XL ; NR. 20 *
                *
0B8A 0000       PO8  DC    **
0B8C 0B              R04
0B8D EEEAF1          LDV/  KIK          8686
0B90 87EAB9          LDX=  A'KB'
0B93 6E17D1          RTJ/  DVF
0B96 F8DC            STV   ZV8
0B98 E8E4            LDV   ZV4
0B9A 6E1B1E          RTJ/  LOD
0B9D F8E4            STV   ZV4        LOG RAD
0B9F 87EAED          LDX=  A'KK9'       38
0BA2 6E1733          RTJ/  MLF
0BA5 87EAB1          LDX=  A'K9'
0BA8 6E17D1          RTJ/  DVF
0BAB 8700DC          LDX=  A'ZV8'
0BAE 6E1681          RTJ/  SBF
0BB1 F8DC            STV   ZV8
0BB3 EEEAE9          LDV/  KK6        15458
0BB6 87EAB9          LDX=  A'KB'
0BB9 6E17D1          RTJ/  DVF
0BBC F8E0            STV   ZV3
0BBE E8E4            LDV   ZV4
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```
0BC0 87EAE5          LDX=  A'KK7'        455
0BC3 6E1733          RTJ/  MLF
0BC6 87EAB9          LDX=  A'KB'
0BC9 6E17D1          RTJ/  DVF
0BCC 8709F8          LDX=  A'KOK'
0BCF 6E1678          RTJ/  ADF
0BD2 8700E0          LDX=  A'ZV3'
0BD5 6E1681          RTJ/  SBF
0BD8 8700DC          LDX=  A'ZV8'
0BDB 6E17D1          RTJ/  DVF
0BDE F8D8            STV   ZV1
0BE0 EE8B01          LDV/  KBK        5918
0BE3 87EAB9          LDX=  A'KB'
0BE6 6E17D1          RTJ/  DVF
0BE9 F8DC            STV   ZV8             B; IN ZV1 IST A
0BEB E8D8            LDV   ZV1
0BED 8700DC          LDX=  A'ZV8'
0BF0 6E1681          RTJ/  SBF
0BF3 6E1A86          RTJ/  ZXN
0BF6 8700F6          LDX=  A'LV'
0BF9 6E17D1          RTJ/  DVF
0BFC F8EE            STV   XL
0BFE 670B8A          JMP=  PO8
                *
                *
                * LV -ZUERST RECHNEN ; NR 81 *
                *
0C01 0000       PO3  DC    **
0C03 E7B1B8          LDA=  X'B1D8'
0C06 F0DC            STA   ZV8
0C08 F70000          LDX=  0
0C0B 887C            STX   ZTA
0C0D 807C       SO6  LDX   ZTA
0C0F 09              R08
0C10 EEAB01          LDV/  TAB+1,X
0C13 E0DC            LDX   ZV8
0C15 1708            JAX   SC8
0C17 6E05CE          RTJ/  NFT
0C1A 61F1            JMP   SO6
0C1C 6E07FC     SO5  RTJ/  LF1
0C1F 6E0E11          RTJ/  LNF
0C22 6E0E41          RTJ/  PEX
0C25 E850            LDV   L
0C27 F0F6            STV   LV
0C29 63D6            JMP=  PO3
                *
                *
                * PC1 : RAD -V SUCHEN + IN FL ; NR. 86 *
                *
0C2B 0000       PO1  DC    **
0C2D 80AA            LDX   RX
0C2F 44              INX
0C30 68FA            STX   ASP
0C32 80FA       SO8  LDX   ASP
0C34 09              R08
0C35 E6A000          LDA/  SPE,X
0C38 87B1B8          LDX=  X'B1D8'
0C3B 1709            JAX   SO1
0C3D E0FA            LDA   ASP
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0C3F A70007            ADA*  7
0C42 F0FA              STA   ASP
0C44 612C              JMP   SG2
0C46 0B          S01   R04
0C47 80FA              LDX   ASP
0C49 EEA003            LDV/  SPE+3,X
0C4C 6E047B            RTJ/  UP0
0C4F 6E0693            RTJ/  UP3
0C52 F8E4              STV   ZW4        PAB-V
0C54 [illegible]       [illegible]
0C56 EEA001            LDV/  SPE+1,X
0C59 6E047C            RTJ/  UP0
0C5C 6E0693            RTJ/  UP3
0C5F 878AB1            LDX*  A'K9'
0C62 6E17D1            RTJ/  DVF
0C65 [illegible]       RTJ/  [illegible]
0C68 F8F2              STV   NOK
0C6A 63BF              JMP*  PO1
                 *
                 *
                 * LTA : ERGEBNISSE (IN FL) IN TAB ; NR.= 83 *
                 *
0C6C 0000        LTA   DC    **
0C6E 0B                R04
0C6F E840              LDV   PT
0C71 FEA811            STV/  TAB+17,X
0C74 E818              LDV   EPT
0C76 FEA815            STV/  TAB+21,X
0C79 E80E              LDV   E
0C7B FEA819            STV/  TAB+25,X
0C7E E810              LDV   S
0C80 FEA81D            STV/  TAB+29,X
0C83 E80C              LDV   HF
0C85 FEA821            STV/  TAB+33,X
0C88 E814              LDV   TV
0C8A FEA835            STV/  TAB+53,X
0C8D E88C              LDV   IT
0C8F FEA84D            STV/  TAB+77,X
0C92 E8EA              LDV   N
0C94 FEA851            STV/  TAB+81,X
0C97 E344              LDV   PL
0C99 6E0CBC            RTJ/  PO1
0C9C FEA825            STV/  TAB+37,X
0C9F 0B                R04
0CA0 E848              LDV   ML
0CA2 6E0CBC            RTJ/  PO1
0CA5 FEA828            STV/  TAB+40,X
0CA8 0B                R04
0CA9 E84C              LDV   VPN
0CAB 6E0CBC            RTJ/  PO1
0CAE FEA82B            STV/  TAB+43,X
0CB1 0B                R04
0CB2 E850              LDV   L
0CB4 6E0CBC            RTJ/  PO1
0CB7 FEA82E            STV/  TAB+46,X
0CBA 63B0              JMP*  ETA
                 *
0CBC 0000        PO1   DC    **
0CBE 6E06BA            RTJ/  DEE
```

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0CC1 807C              LDX   ZTA
0CC3 0A                R03
0CC4 E8CF              LDV   WO3+4
0CC3 63FA              JMP*  PO1
                 *
                 *
                 * TAE : ENDE V. TAB ? ; NR = 84 *
                 *
0CC8 0000        TAE   DC    **
[illegible]            [illegible]
0CCB 807C              LDX   ZTA
0CCD EEA000            LDV/  TAB,X
0CD0 87FFA0            LDX*  X'FFA0'      BLANK
0CD3 1703              JAX   SA8          NAECHSTER TEIL
0CD5 0B                R03
[illegible]            JMP*  TAE
0CD8 870000      SA8   LDX*  0
0CDB 887C              STX   ZTA
0CDD 660884            JMP/  SP8
                 *
                 * PK1 : FORMEL DH ;  NR. = 85 *
                 *
0CE0 0000        PK1   DC    **
0CE2 0B                R04
0CE3 E8D4              LDV   ZW1
0CE5 87008E            LDX*  A'P8'
0CE8 6E17D1            RTJ/  DVF
0CEB 6E1807            RTJ/  LGW
0CEE F8D8              STV   ZW1          LN PIK/P8
0CF0 EEBAD1            LDV/  KK8          8738
0CF3 878A05            LDX*  A'K8'        10
0CF6 6E17D1            RTJ/  DVF
0CF9 F8DC              STV   ZW8
0CFB E874              LDV   T1
0CFD 87008C            LDX*  A'ZW8'
0D00 6E1678            RTJ/  ADF
0D03 F874              STV   T1           IN K.
0D05 E870              LDV   T8
0D07 87008C            LDX*  A'ZW8'
0D0A 6E1678            RTJ/  ADF
0D0D F870              STV   T8
0D0F 870074            LDX*  A'T1'
0D12 6E1678            RTJ/  ADF
0D15 878A05            LDX*  A'K8'        8
0D18 6E17D1            RTJ/  DVF
0D1B 870008            LDX*  A'ZW1'
0D1E 6E1733            RTJ/  MLF
0D21 878AFD            LDX*  A'MAR'       89286
0D24 6E1733            RTJ/  MLF
0D27 878AB9            LDX*  A'K8'
0D2A 6E17D1            RTJ/  DVF
0D2D F89E              STV   DH
0D2F 63AF              JMP*  PK1
                 *
                 *
                 * PK8 : DATEN IN FL ; NR = 86 *
                 *
0D31 0000        PK8   DC    **
0D33 6E07AF            RTJ/  FFL
```

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0D36 E834              LDV   P
0D38 F88E              STV   P8
0D3A 6E07C4            RTJ/  TFL
0D3D E830              LDV   T
0D3F F870              STV   T8
0D41 6E0BCE            RTJ/  NET
0D44 6E0D73            RTJ/  TAF
0D47 6E07AF            RTJ/  FFL
0D4A E834              LDV   P
0D4C F88A              STV   P1
0D4E 6E07C4            RTJ/  TFL
0D51 E830              LDV   T
0D53 F874              STV   T1
0D55 E88A              LDV   P1
0D57 87008E            LDX*  A'P8'
0D5A 6E1681            RTJ/  SBF
0D5D 8700FC            LDX*  A'F'
0D60 6E1733            RTJ/  MLF
0D63 878AB1            LDX*  A'K9'
0D66 6E17D1            RTJ/  DVF
0D69 87008A            LDX*  A'P1'
0D6C 6E1678            RTJ/  ADF
0D6F F8D4              STV   ZWT
0D71 63BE              JMP*  PK8
                 *
                 *
                 * TAF : ENDE DER TAB ( WIE TAE ) ; NR = 87 *
                 *
0D73 0000        TAF   DC    **
0D75 0B                R01
0D76 807C              LDX   ZTA
0D78 EEA200            LDV/  TAB,X
0D7B 87FFA0            LDX*  X'FFA0'
0D7E 1703              JAX   SA4
0D80 0B                R04
0D81 63F0              JMP*  TAF
0D83 660356      SA4   JMP/  SP5
                 *
                 *
                 * PH1 : FORMEL CPA ; +HILFSPRC. ; NR = 88 *
                 *
0D86 0000        PH1   DC    **
0D88 0B                R04
0D89 E8D8              LDV   ZW1
0D8B 8700DC            LDX*  A'ZW8'
0D8E 6E1681            RTJ/  SBF
0D91 87009E            LDX*  A'DH'
0D94 6E17D1            RTJ/  DVF
0D97 872AB1            LDX*  A'K9'
0D9A 6E1733            RTJ/  MLF
0D9D F84C              STV   CPA
0D9F 63E5              JMP*  PH1
                 *
0DA1 0000        PH2   DC    **
0DA3 0B                R04
0DA4 E874              LDV   T1
0DA6 F8D8              STV   ZW1
0DA8 E870              LDV   T8
0DAA F8DC              STV   ZW8
```

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0DAC 63F3              JMP*  PH2
                 *
0DAE 0000        PH3   DC    **
0DB0 6E8C09            RTJ/  PSH
0DB3 EEA819            LDV/  TAB+25,X
0DB6 6E0DD8            RTJ/  PO8
0DB9 EEA819            LDV/  TAB+25,X
0DBC F8D8              STV   ZW1
0DBE 63E5              JMP*  PH3              E1,E8
                 *
0DC0 0000        PH4   DC    **        S1,S8
0DC2 6E8C8F            RTJ/  PAH
0DC5 EEA81D            LDV/  TAB+29,X
0DC8 6E0DD8            RTJ/  PO8
0DCB EEA81D            LDV/  TAB+29,X
0DCE F8D8              STV   ZW1
0DD0 63EE              JMP*  PH4
                 *
0DD8 0000        PO8   DC    **
0DD4 F8DC              STV   ZW8
0DD6 4E                TXA
0DD7 870083            SBA*  F'99'
0DDA 4C                TAX
0DDB 63F9              JMP*  PO8
                 *
0DDD 0000        PH5   DC    **
0DDF 6E8C55            RTJ/  PSH
0DE2 EEA821            LDV/  TAB+33,X
0DE5 6E0DD8            RTJ/  PO8
0DE8 EEA821            LDV/  TAB+33,X
0DEB F8D8              STV   ZW1
0DED 63EE              JMP*  PH5
                 *
0DEF 0000        PH6   DC    **
0DF1 0B                R04
0DF2 807C              LDX   ZTA
0DF4 EEA811            LDV/  TAB+17,X
0DF7 6E0DD8            RTJ/  PO8
0DFA EEA811            LDV/  TAB+17,X
0DFD F8D8              STV   ZW1
0DFF 63EE              JMP*  PH6              PT1,PT8   UND IN PH5 RF
                 *
0E01 0000        PH7   DC    **
0E03 0B                R04
0E04 807C              LDX   ZTA
0E06 EEA851            LDV/  TAB+81,X
0E09 F896              STV   N8
0E0B 6E0DD8            RTJ/  PO8
0E0E EEA851            LDV/  TAB+81,X
0E11 F892              STV   N1
0E13 63EC              JMP*  PH7              N1,N8
                 *
                 *
                 * AUSTAUSCH *
                 *
0E15 0000        PI1   DC    **
0E17 0B                R04
0E18 4E8B1E            RTJ/  GE1
0E1B E88A              LDV   P1
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```
0E1D 870074          LDX*   A'T1'
0E20 6E17D1          RTJ/   DVF
0E23 F8D8            STV    ZV1
0E25 E8DE            LDV    P8
0E27 870070          LDX*   A'T8'
0E2A 6E17D1          RTJ/   DVF
0E2D 87008E          LDX*   A'ZW1'
0E30 6E1078          RTJ/   ABF
0E33 F8D8            STV    ZW1
0E35 E898            LDV    W1
0E37 6E8D00          RTJ/   RC2
0E3A F898            STV    W1
0E3C E8DE            LDV/   P8
0E3F 870098          LDX*   A'W1'
0E42 6E17D1          RTJ/   DVF
0E45 F89A            STV    W1
0E47 E896            LDV    W2
0E49 6E8D00          RTJ/   RC2
0E4C F896            STV    W2
0E4E EEEA80          LDV/   W2
0E51 870096          LDX*   A'W2'
0E54 6E17D1          RTJ/   DVF
0E57 F896            STV    W2
0E59 E898            LDV    W1
0E5B 870096          LDX*   A'W2'
0E5E 6E1481          RTJ/   SBF
0E61 F892            STV    W1
0E63 870098          LDX*   A'W1'
0E66 6E1733          RTJ/   MLF
0E69 F89E            STV    W1
0E6B E86A            LDV    P1
0E6D 87008E          LDX*   A'PS'
0E70 6E1681          RTJ/   SBF
0E73 F8DC            STV    ZW8
0E75 8700DC          LDX*   A'ZW8'
0E78 6E1733          RTJ/   MLF
0E7B F8DC            STV    ZW8
0E7D 87EAF8          LDX*   A'KEK'              643
0E80 6E1733          RTJ/   MLF
0E83 87EAB1          LDX*   A'K9'               100
0E86 6E17D1          RTJ/   DVF
0E89 87EAB9          LDX*   A'K8'               1000
0E8C 6E17D1          RTJ/   DVF
0E8F 87EAB9          LDX*   A'K8'
0E92 6E17D1          RTJ/   DVF
0E95 8700D8          LDX*   A'ZW1'
0E98 6E17D1          RTJ/   DVF
0E9B 870098          LDX*   A'W1'
0E9E 6E17D1          RTJ/   DVF
0EA1 F886            STV    AUS
0EA3 E8DC            LDV    ZW8
0EA5 87EAF9          LDX*   A'K3H'              373
0EA8 6E1733          RTJ/   MLF
0EAB 87EAB1          LDX*   A'K9'
0EAE 6E17D1          RTJ/   DVF
0EB1 8700D8          LDX*   A'ZW1'
0EB4 6E17D1          RTJ/   DVF
0EB7 8700DE          LDX*   A'ZW1'
0EBA 6E17D1          RTJ/   DVF
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0EBD 870098          LDX*   A'W1'
0EC0 6E17D1          RTJ/   DVF
0EC3 F89A            STV    DIF
0EC5 670E15          JMP*   PI1
               *
               *
               * [illegible]
               *
0EC8 0000      PH1   DC     **
0ECA E8D8            LDA    ZW1
0ECC 807C            SBA    ZTA
0ECE 1408            JAN    PR1
[illegible]
0ED3 63F3            JMP*   PH1
0ED5 DC        PR1   R01
0ED6 63F0            JMP*   PH1
               *
               *
0ED8 0000      PH2   DC     **                  PT
0EDA 0D              R04
0EDB 807C            LDX    ZTA
0EDD EEA811          LDV/   TAB+17,X
0EE0 6E06BA          RTJ/   DEZ
0EE3 0D              R04
0EE4 E8CE            LDV    W03+3
0EE6 807C            LDX    ZTA
0EE8 FEA811          STV/   TAB+17,X
0EEB 6E0EC8          RTJ/   PH1
0EEE 63E8            JMP*   PH2
               *
               *
0EF0 0000      PH4   DC     **                  E
0EF2 0D              R04
0EF3 807C            LDX    ZTA
0EF5 EEA819          LDV/   TAB+25,X
0EF8 6E0F03          RTJ/   P03
0EFB FEA819          STV/   TAB+25,X
0EFE 6E0EC8          RTJ/   PH1
0F01 63ED            JMP*   PH4
               *
0F03 0000      P03   DC     **
0F05 6E06BA          RTJ/   DEZ
0F08 0D              R04
0F09 E8CF            LDV    W03+4
0F0B 807C            LDX    ZTA
0F0D 63F4            JMP*   P03
               *
               *
0F0F 0000      PK9   DC     **                  DH
0F11 0D              R04
0F12 807C            LDX    ZTA
0F14 EEA831          LDV/   TAB+49,X
0F17 6E0F03          RTJ/   P03
0F1A 0D              R04
0F1B E8CD            LDV    W03+2
0F1D FEA831          STV/   TAB+49,X
0F20 6E0EC8          RTJ/   PH1
0F23 63EA            JMP*   PK9
               *
```

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               *
               * FORTSETZUNG V. NR. 30 ;   NR - 31  *
               *
0F25 0000      PIN   DC     **
0F27 0D              R04
0F28 807C            LDX    ZTA
0F2A EEA835          LDV/   TAB+53,X
0F2D 6E06BA          RTJ/   DEZ
0F30 6E0F41          RTJ/   P04
0F33 FEA835          STV/   TAB+53,X
0F36 0A              R03
0F37 E8D0            LDV    W03+5
0F39 FEA836          STV/   TAB+54,X
0F3C 6E0EC8          RTJ/   PH1
0F3F 63E4            JMP*   PIN
               *
0F41 0000      P04   DC     **
0F43 08              R01
0F44 E8CB            LDV    W03
0F46 807C            LDX    ZTA
0F48 63F7            JMP*   P04
               *
0F4A 0000      PTM   DC     **
0F4C 0D              R04                        A
0F4D 807C            LDX    ZTA
0F4F EEA857          LDV/   TAB+87,X
0F52 6E06BA          RTJ/   DEZ
0F55 6E0F65          RTJ/   P05
0F58 FEA845          STV/   TAB+85,X
0F5B E8D0            LDV    W03+5
0F5D FEA858          STV/   TAB+88,X
0F60 6E0EC8          RTJ/   PH1
0F63 63E5            JMP*   PTM
               *
0F65 0000      P05   DC     **
0F67 0A              R03
0F68 E8CD            LDV    W03+2
0F6A 807C            LDX    ZTA
0F6C 63F7            JMP*   P05
               *
               *
0F6E 0000      PSM   DC     **
0F70 0D              R04
0F71 807C            LDX    ZTA
0F73 EEA85D          LDV/   TAB+93,X
0F76 6E06BA          RTJ/   DEZ
0F79 6E8B36          RTJ/   GEZ
0F7C FEA85B          STV/   TAB+91,X
0F7F E8CF            LDV    W03+4
0F81 FEA85E          STV/   TAB+94,X
0F84 6E0EC8          RTJ/   PH1
0F87 63E5            JMP*   PSM
               *
               *
               * P9M ; IN AUS *DIF VORNE STATT RO AC BRINGEN *
               *
0F89 0000      P9M   DC     **
0F8B 08              R01
0F8C 807C            LDX    ZTA
```

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```
0F8E EEA855          LDV/   TAB+85,X
0F91 6E0FCB          RTJ/   P06
0F94 FEA855          STV/   TAB+85,X
0F97 EEA856          LDV/   TAB+86,X
0F9A 6E0FCB          RTJ/   P06
0F9D FEA856          STV/   TAB+86,X
0FA0 EEA857          LDV/   TAB+87,X
0FA3 6E0FCB          RTJ/   P06
0FA6 FEA857          STV/   TAB+87,X
0FA9 807C      SM1   LDX    ZTA
0FAB EEA85B          LDV/   TAB+91,X
0FAE 6E0FD8          RTJ/   P07
0FB1 FEA85B          STV/   TAB+91,X
0FB4 EEA85C          LDV/   TAB+92,X
0FB7 6E0FD8          RTJ/   P07
0FBA FEA85C          STV/   TAB+92,X
0FBD EEA85D          LDV/   TAB+93,X
0FC0 6E0FD8          RTJ/   P07
0FC3 FEA85D          STV/   TAB+93,X
0FC6 6E0EC8    SM2   RTJ/   PH1
0FC9 63BE            JMP*   P9M
               *
0FCB 0000      P06   DC     **
0FCD 87FFF0          LDX*   X'FFF0'
0FD0 1FC7            MAX    SM1
0FD2 EFA0            LDV*   X'A0'
0FD4 807C            LDX    ZTA
0FD6 63F3            JMP*   P06
               *
0FD8 0000      P07   DC     **
0FDA 87FFB0          LDX*   X'FFB0'
0FDD 1FE7            MAX    SM2
0FDF EFA0            LDV*   X'A0'
0FE1 807C            LDX    ZTA
0FE3 63F3            JMP*   P07
               *
               *
               * UP F. PRINT ; NR. - 33 *
               *
0FE5 0000      PR2   DC     **
0FE7 6E118A          RTJ/   PRT
0FEA 6E118A          RTJ/   PRT
0FED 63F6            JMP*   PR2
               *
0FEF 0000      PR3   DC     **
0FF1 6E118A          RTJ/   PRT
0FF4 6E0FE5          RTJ/   PR2
0FF7 63F6            JMP*   PR3
               *
0FF9 0000      PR4   DC     **
0FFB 6E0FEF          RTJ/   PR3
0FFE 6E118A          RTJ/   PRT
1001 63F6            JMP*   PR4
               *
1003 0000      C01   DC     **
1005 EFAC            LDV*   C',
1007 6E2BF2          RTJ/   OUT
100A 6E118A          RTJ/   PRT
100D 63F4            JMP*   C01
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```
                    *
100F 0000           CO8     DC      **
1011 6E1003                 RTJ/    CO1
1014 6E110A                 RTJ/    PRT
1017 63F6                   JMP*    CO8
                    *
                    *
                    * KOPF 1 + 8 ; NR - 34 *
                    *
1019 0000           KO1     DC      **
101B 870017                 LDX*    23
101E EEA001         PA0     LDV/    AN0,X
1021 6E0FF8                 RTJ/    OUT
1024 45                     DCX
1025 1DF7                   BXN     PA0
1027 870017                 LDX*    23
102A EEA0E9         PA3     LDV/    AN3,X
102D 6E0FF8                 RTJ/    OUT
1030 43                     DCX
1031 1DF7                   BXN     PA3
1033 870017                 LDX*    23
1036 EEA001         PA4     LDV/    AN4,X
1039 6E0FF8                 RTJ/    OUT
103C 45                     DCX
103D 1DF7                   BXN     PA4
103F 6E1170                 RTJ/    VRZ
1042 870000                 LDX*    0
1045 807C                   STX     STA
1047 6300                   JMP*    KO1
                    *
1049 0000           KO8     DC      **
104B 870016                 LDX*    24
104E EEA019         PA5     LDV/    AN5,X
1051 6E0FF8                 RTJ/    OUT
1054 45                     DCX
1055 1DF7                   BXN     PA5
1057 870017                 LDX*    23
105A EEA030         PA6     LDV/    AN6,X
105D 6E0FF8                 RTJ/    OUT
1060 45                     DCX
1061 1DF7                   BXN     PA6
1063 870016                 LDX*    24
1066 EEA0AA         PA7     LDV/    AN7,X
1069 6E0FF8                 RTJ/    OUT
106C 45                     DCX
106D 1DF7                   BXN     PA7
106F 6E1170                 RTJ/    VRZ
1072 870000                 LDX*    0
1075 807C                   STX     STA
1077 6300                   JMP*    KO8
                    *
                    * UP F. PRINT + ZVI ; NR.- 35 *
                    *
1079 0000           P40     DC      **
107B 6E0FF9                 RTJ/    PR4
107E 6E11A9                 RTJ/    ZVI
1081 63F6                   JMP*    P40
                    *
1083 0000           P31     DC      **
```

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```
1085 6E0FE5                 RTJ/    PRS
1088 6E1003                 RTJ/    CO1
108B 6E11A9                 RTJ/    ZVI
108E 63F5                   JMP*    P31
                    *
1090 0000           PSS     DC      **
1092 6E0FE5                 RTJ/    PRS
1095 6E1008                 RTJ/    CO8
1098 6E11A9                 RTJ/    ZVI
109B 63F5                   JMP*    PSS
                    *
109D 0000           P4E     DC      **
109F 6E0FF9                 RTJ/    PR4
10A2 6E1008                 RTJ/    CO8
10A5 6E11A9                 RTJ/    ZVI
10A8 63F3                   JMP*    P4E
                    *
10AA 0000           P11     DC      **
10AC 6E0F63                 RTJ/    PRX
10AF 6E0F0F                 RTJ/    IXI
10B2 63F6                   JMP*    P11
                    *
10B4 0000           P81     DC      **
10B6 6E0FE5                 RTJ/    PRS
10B9 6E1003                 RTJ/    CO1
10BC 6E11A9                 RTJ/    ZVI
10BF 63F5                   JMP*    P81
                    *
10C1 0000           PAK     DC      **
10C3 6E0FF9                 RTJ/    PR4
10C6 6E100F                 RTJ/    CO8
10C9 63F6                   JMP*    PAK
                    *
                    *
                    * PT1 - PRINT 1.TEIL V. TAB ; NR.- 36 *
                    *
10CB 0000           PT1     DC      **
10CD 807C                   LDX     STA
10CF 6E10AA                 RTJ/    P11             Z
10D2 6E1079                 RTJ/    P40             H
10D5 6E1079                 RTJ/    P40             P
10D8 6E1083                 RTJ/    P31             T
10DB 6E1083                 RTJ/    P31             TF
10DE 6E1079                 RTJ/    P40
10E1 6E1079                 RTJ/    P40     SPT.    PT*
10E4 6E1090                 RTJ/    PSS             E
10E7 6E1090                 RTJ/    PSS             S
10EA 6E10B4                 RTJ/    P81
10ED 44                     INX
10EE 6E10B4                 RTJ/    P81             +L
10F1 6E10B4                 RTJ/    P81             -L
10F4 6E118A                 RTJ/    PRT             +/-
10F7 6E100F                 RTJ/    CO8
10FA 6E11A9                 RTJ/    ZVI
10FD 6E0FE5                 RTJ/    PRS             L
1100 6E1003                 RTJ/    CO1
1103 6E1170                 RTJ/    VRZ
1106 63C3                   JMP*    PT1
                    *
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```
1108 0000           PT8     DC      **
110A 807C                   LDX     STA
110C 6E10AA                 RTJ/    P11     Z
110F 4E                     TXA
1110 A700B0                 ADA*    F'58'
1113 F0FA                   STA     ASP
1115 870004                 LDX*    4
1118 6E117E                 RTJ/    ZVR
111B 80FA                   LDX     ASP
111D 6E1131                 RTJ/    PT4
1120 63E6                   JMP*    PT8
                    *
1122 0000           PT3     DC      **
1124 807C                   LDX     STA
1126 6E0FA1                 RTJ/    IX8
1129 6E0B4F                 RTJ/    GE4
112C 6E1131                 RTJ/    PT4
112F 63F1                   JMP*    PT3
                    *
1131 0000           PT4     DC      **
1133 6E1079                 RTJ/    P40
1136 6E1090                 RTJ/    PSS             GT
1139 6E1090                 RTJ/    PSS             GE
113C 6E1090                 RTJ/    PSS             GS
113F 6E1090                 RTJ/    PSS             SRF
1142 6E1090                 RTJ/    PSS             CPT
1145 6E1090                 RTJ/    PSS             1
1148 6E1090                 RTJ/    PSS             N
114B 6E10C1                 RTJ/    PAK
114E 6E11A9                 RTJ/    ZVI
1151 6E0B3F                 RTJ/    GE3
1154 807C                   LDX     STA
1156 6E0F63                 RTJ/    PRX
1159 6E1170                 RTJ/    VRZ
115C 63D3                   JMP*    PT4
                    *
                    *
                    *
                    * ENT ; TEIL T.F.L ENTFAELLT *
                    *
115E 0000           ENT     DC      **
1160 870003                 LDX*    3
1163 EFAD           EN1     LDV*    X'AD'
1165 6E0BF8                 RTJ/    OUT
1168 45                     DCX
1169 1DF8                   BXN     EN1
116B 6E0BR8                 RTJ/    RU6
116E 63EE                   JMP*    ENT
                    *
                    *
                    * UP ; VRZ, PRT PRS,ZVI,ZVR ...  ; NR.- 38 *
                    *
1170 0000           VRZ     DC      **
1172 EF8D                   LDV*    X'8D'
1174 6E0BF8                 RTJ/    OUT
1177 EF8A                   LDV*    X'8A'
1179 6E0BF8                 RTJ/    OUT
117C 63F8                   JMP*    VRZ
                    *
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117E 0000           ZVR     DC      **
1180 EFA0                   LDV*    X'A0'
1182 6E0BF8                 RTJ/    OUT
1185 45                     DCX
1186 1BF8                   BXZ     ZVR+8
1188 63F4                   JMP*    ZVR
                    *
118A 0000           PRT     DC      **
118C EEAE00                 LDV/    TAB,X
118F 6E0BF8                 RTJ/    OUT
1192 44                     INX
1193 63F5                   JMP*    PRT
                    *
1195 0000           PRS     DC      **
1197 EEA000                 LDV/    SPE,X
119A 6E0BF8                 RTJ/    OUT
119D 44                     INX
119E 63F8                   JMP*    PRS
                    *
11A0 0000           COM     DC      **
11A2 EFAC                   LDV*    C','
11A4 6E0BF8                 RTJ/    OUT
11A7 63F7                   JMP*    COM
                    *
11A9 0000           ZVI     DC      **
11AB EFA0                   LDV*    X'A0'
11AD 6E0BF8                 RTJ/    OUT
11B0 63F7                   JMP*    ZVI
                    *
                    *
                    * UP - EINLESEN MIT SLE *
11B2 0000           CIT     DC      **
11B4 38                     ROI
11B5 870000                 LDA*    0
11B8 F400FA                 STA/    ASP
11BB 39C8                   ORA     6,8
11BD 6E11EE         INP     RTJ/    SLE
11C0 D7007F                 ANA*    X'7F'
11C3 A70080                 ADA*    X'80'
11C6 B600FA                 LDX/    ASP
11C9 FEA000                 STV/    SPE,X
11CC 8700FF                 LDX*    X'FF'
11CF 17EC                   JAN     INP
11D1 87008A                 LDX*    X'8A'
11D4 17E7                   JAN     INP
11D6 87008D                 LDX*    X'8D'
11D9 17E2                   JAN     INP
11DB 8700A0                 LDX*    X'A0'
11DE 17DD                   JAN     INP
11E0 B60DA5                 LDX/    CAS
11E3 1705                   JAN     EEI
11E5 7400FA                 IVM/    ASP
11E8 41D3                   JMP     INP
11EA 3998           EEI     ORA     4,8
11EC 4187                   JMP     CIX
11EE 0000           SLE     DC      **
11F0 6E11FE                 RTJ/    RTA
11F3 63F9                   JMP*    SLE
11F5 1003                   JOV     ERR
```

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11F7 0E                 RO1
11F8 63FA               JMP*  $-4
11FA 3968        SRR    SRA   4,8
11FC 0C                 HLT
11FD 0001               DC    1
11FE 0000        RTA    DC    **
1800 38021 1FD          IRM   1,8,RTA-1
1804 E700               LDV=  X'8'
1806 ....               ANV   RTA-1
1808 11F8               JAE   *+8
180A EF08               LDV=  A'8'
180C D0EF               ANV   RTA-1
180E 1101               JAE   *+3
1810 0C                 SO1
1811 5108               TRA   0,8
1813 63E9               JMP*  RTA
1815 6398        GIX    JMP*  GIT
                 *
                 **
                 *
                 * ENTSCH. WELCHE STELL IN PRINT  AUSTEU. *
                 *
1817 0000        RUD    DC    **
1819 1003               JOV   SRX
181B 660486             JMP/  SR6+5
181E E6A8AE      SRX    LDA/  OA6
1821 870004             LDX=  X'0004'
1824 1907               JAX   RU1
1826 870008             LDX=  X'0008'
1829 170F               JAX   RU8
182B 870000             LDX=  X'0000'
182E 170F               JAX   RU3
1830 66057C             JMP/  RAU
1833 63E2               JMP*  RUD
1835 666458      RU1    JMP/  RIU
1838 63DD               JMP*  RUD
183A 660500      RU8    JMP/  RSU
183D 63D8               JMP*  RUD
183F 66053E      RU3    JMP/  RSU
1842 63D3               JMP*  RUD
                 *
1844 6E1170      VRA    RTJ/  VRE
1847 66016E             JMP/  BG1
                 *
184A 6E1170      VRB    RTJ/  VRE
184D 660180             JMP/  BG8
                 *
1850 6E1170      VRC    RTJ/  VRE
1853 660194             JMP/  BO3
                 *
1856 6E1170      VRD    RTJ/  VRE
1859 66014B             JMP/  BO4
                 *
185C 6E1170      VRE    RTJ/  VRE
185F 660128             JMP/  BE6
                 *
1862 0000        BLK    DC    **
1864 8707D0             LDX=  2000
1867 08          BLA    RO1
```

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```
1868 EFA0               LDV=  X'A0'
186A FEA800             STV/  TAB,X
186D 48                 DCX
186E 1DF7               NAN   BLA
1870 63F0               JMP*  FLX
                 *
1872 0000        SOX    DC    **
1874 870000             LDX=  0
1877 807C               STX   ZTA
1879 807C        TRS    LDX   ZTA
187B E7B0B0             LDA=  X'B0B0'
187E F6A803             STA/  TAB+3,X
1881 6E006E             RTJ/  NST
1884 48                 TXA
1885 E7....             LDA=  A'...'
1888 1C08               NAN   TRI
188A 61ED               JMP   TRS
188C 63B4        TRI    JMP*  SOX
                 *
188E 0000        SLY    DC    **
1890 870000             LDX=  0
1893 E6A000             LDA/  SPE,X
1896 87ADAD             LDX=  X'ADAD'
1899 1705               JAX   SYI
189B 6E1868             RTJ/  BLX
189E 63EE               JMP*  SLY
18A0 6E1186      SYI    RTJ/  SHT
18A3 0C                 SOI
18A4 63E8               JMP*  SLY
                 *
                 * AUFRUNDEN AN  'KST' LDX= .. KOMMASTELLEN*
                 *
18A6 0000        ARD    DC    **
18A8 08                 ROI
18A9 80A8               LDX   KST          KOMMASTELLEN
18AB E8A801             LDV/  VO3+4,X
18AE 87FFB5             SDA=  X'FFB5'
18B1 1C08               NAN   PRI
18B3 63F1               JMP*  ARD
18B5 7680CF      PRI    IVM/  VO3+4,X
18B8 E8D0D0             LDV/  VO3+5,X
18BB 87FFBA             LDX=  X'FFBA'
18BE 1F82               NAX   RAI
18C0 EFB0               LDV=  X'B0'
18C2 80A8               LDX   KST
18C4 FE80D0             STV/  VO3+5,X
18C7 7680CE             IVM/  VO3+3,X
18CA EF80CF             LDV/  VO3+4,X
18CD 87FFBA             LDX=  X'FFBA'
18D0 1F1C               NAX   MAI
18D2 EFB0               LDV=  X'B0'
18D4 80A8               LDX   KST
18D6 FE80CF             STV/  VO3+4,X
18D9 7680CD             IVM/  VO3+2,X
18DC E880CE             LDV/  VO3+3,X
18DF 87FFBA             LDX=  X'FFBA'
18E2 1F0A               NAX   MAI
18E4 EFB0               LDV=  X'B0'
18E6 80A8               LDX   KST
```

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18E8 FE80CE             STV/  VO3+3,X
18EB 7680CC             IVM/  VO3+1,X
18EE 6386        MAI    JMP*  ARD
                 *
                 *  DURCHSCHNITT *
                 *
18F0 0000        PRI    DC    **
18F2 870000             LDX=  0
18F5 6E8EED             RTJ/  POT
18F8 F830               STV   T
18FA 870011             LDX=  17
18FD 6E136D             RTJ/  PIX
1300 F840               STV   PT
1302 870019             LDX=  81
1305 6E136D             RTJ/  PIX
1308 F818               STV   EPT
130A 870019             LDX=  53
130D 6E136D             RTJ/  PIX
1310 F808               STV   E
1312 E7001D             LDX=  89
1315 4E136D             RTJ/  PIX
1318 F810               STV   S
131A 870021             LDX=  33
131D 4E136D             RTJ/  PIX
1320 F80C               STV   AF
1322 870000             LDX=  0
1325 6E2E3A             RTJ/  POV
1328 F880               STV   L
132A 870035             LDX=  53
132D 6E136D             RTJ/  PIX
1330 F814               STV   TV
1332 87009C             LDX=  156
1335 6E136D             RTJ/  PIX
1338 F828               STV   GRT
133A 8700A0             LDX=  160
133D 6E136D             RTJ/  PIX
1340 F81C               STV   GRE
1342 8700A4             LDX=  164
1345 6E136D             RTJ/  PIX
1348 F824               STV   GRS
134A 8700A8             LDX=  168
134D 6E136D             RTJ/  PIX
1350 F82C               STV   GRF
1352 8700AC             LDX=  172
1355 6E136D             RTJ/  PIX
1358 F82C               STV   GPT
135A 870051             LDX=  81
135D 6E136D             RTJ/  PIX
1360 F8EA               STV   N
1362 87008A             LDX=  136
1365 6E136D             RTJ/  PIX
1368 F854               STV   SUS
136A 668C8F             JMP   EPR-4
                 *
136D 0000        PIX    DC    **
136F 0D                 RO5
1370 887C               STX   ZTA
1372 E7000C             LDA=  0
1375 70DA               STA   ZS1+8
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1377 6E8FB3             RTJ/  PX8
137A 807C        PRE    LDX   ZTA
137C 4E8C7B             RTJ/  PR1
137F 8700D8             LDX=  A'EV1'
1382 6E0FBD             RTJ/  PR3
1385 F8D8               STV   ZV1
1387 6E0ECE      PR3    RTJ/  NET
138A 70E8               IVM   ZVX
138C E70008             LDA=  X'8'
138F 80E8               LDX   ZVX
1391 1FE7               NAX   PRE
1393 E8D8               LDV   ZV1
1395 09                 RO8
1396 E8E0               LDV   ZV3
1398 6E15DA             RTJ/  CEF
139B F8EA               STV   ZV4
139D E8D8               LDV   ZV1
139F 8700EA             LDX=  A'ZV4'
13A2 6E17D1             RTJ/  DVF
13A5 63C6               JMP*  PIX
                 *
                 *
                 * HOEHE IN MP *
                 *
13A7 0B          VYB    RO4
13A8 E8AE               LDV   TTX          UP F. HOEHE IN MP
13AA F8BE               STV   PB
13AC E8B8B2             LDV/  T17
13AF F870               STV   T8
13B1 870000             LDX=  0
13B4 807C               STX   ZTA
13B6 6E07AF             RTJ/  PPL
13B9 E834               LDV   P
13BB F88A               STV   P1
13BD 6E07C8             RTJ/  TPL
13C0 E830               LDV   T
13C2 F874               STV   T1
13C4 E88A               LDV   P1
13C6 87008E             LDX=  A'PR'
13C9 6E1681             RTJ/  SBF
13CC 8700FC             LDX=  A'F'
13CF 6E1733             RTJ/  MLF
13D2 878AB1             LDX=  A'K9'
13D5 6E17D1             RTJ/  DVF
13D8 87008A             LDX=  A'P1'
13DB 6E1678             RTJ/  ADF
13DE F8D4               STV   ZVT
13E0 6E0CE0             RTJ/  PH1
13E3 E8A4               LDV   TX           HOEHE 1700
13E5 87009E             LDX=  A'DM'
13E8 6E1681             RTJ/  SBF
13EB 870000             LDX=  0
13EE 987C               STX   ZTA
                 *
                 * HOEHE F. MP *
                 *
13F0 807C        VY3    LDX   ZTA
13F2 FEA801             STV/  TAB+1,X
13F5 F8D8               STV   ZV1
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13F7 6E0BCE          RTJ/  NET         NOEMS V. 1. NF *
13FA 6E141E          RTJ/  TAK         OB ENDS
13FD EEA831          LDV/  TAB+49,X
1400 F0DC            STV   ZV8
1402 E8D8            LDV   ZV1
1404 870ODC          LDX*  A'ZV8'
1407 6E1681          RTJ/  SBF
140A 6124            JMP   VY3
140C 870000    VY4   LDX*  0
140F 887C            STX   ZTA
1411 6E1A00          RTJ/  ...
1414 1008            JOV   VY5
1416 61F9            JMP   VY4+5
1418 660883    VY5   JMP/  3B8
               *
141B 0000      TAK   DC    **
141D 0B              RO1
141E EEA800          LDV/  TAB,X
1421 877FA0          LDX*  X'FFA0'
1424 1703            JAX   VY8
1426 807C            LDX   ZTA
1428 0B              RO4
1429 63F0            JMP*  TAK
142B 661ADC    VY8   JMP/  VY4
               *
142E 0000      PNV   DC    **
1430 0B              RC4
1431 807C            LDX   ZTA
1433 EEA801          LDV/  TAB+1,X
1436 6E06BA          RTJ/  DEZ
1439 0B              RO4
143A E8CD            LDV   W03+2
143C 807C            LDX   ZTA
143E FEA801          STV/  TAB+1,X
1441 6E2E66          RTJ/  PNF
1444 63E8            JMP*  PNV
               *
               *
               * KONSTANTEN :  NR - 48 *
               *
1446 BAD3D5C1  AN1   DC    C':SUAEVIN-TPUAM'
144A C3D6C9CE
144E ADD4D0D5
1452 C1C8
1454 4E353E00  XOX   DC    X'4E353E00'
89D1                 ORG   X'89D1'
               *
               *
89D1 A0A0C6D4  AN2   DC    C'  FT      T     P       H  E'
89D5 A0A0A0A0
89D9 A0D4A0A0
89DD A0A0D0A0
89E1 A0A0A0A0
89E5 C8A0A0DA
89E9 A0A0A0D3  AN3   DC    C'   S      E     TPE     TP  '
89ED A0A0A0A0
89F1 A0C5A0A0
89F5 A0A0D4D0
89F9 C5A0A0A0
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89FD DACDA0A0
8A01 A0A0CCA0  AN4   DC    C'  L   -1.   L.   L.   FR '
8A05 A0A0DAAB
8A09 A0A0A0CC
8A0D A0A0A0A0
8A11 CCA0A0A0
8A15 A0C6D0A0
8A19 A0A0C5AD  AN5   DC    C'  E-8   T-8   VT    ND  Z'
8A1D C7A0A0A0
8A21 DAA0C7A0
8A25 A0A0A0A0
8A29 A0A0A0A0
8A2D C8CAA0A0
8A31 DA
8A32 A0A0A0C9  AN6   DC    C'  I    TP-6  FR-6  E-6 '
8A36 A0A0A0A0
8A3A A0A0A0D9
8A3E A0A0C6D0
8A42 A0C1A0A0
8A46 D3A0C7A0
8A4A DAA0A0A0  AN7   DC    C'E    D       A      N  '
8A4E A0C4A0A0
8A52 A0A0A0A0
8A56 A0C1A0A0
8A5A A0A0A0A0
8A5E C8A0A0
8A61 BAD5D3D4  AN8   DC    C':RUTARLPNET-PN'
8A65 C1D0C3D0
8A69 CDC5D4AD
8A6D D0CD
8A6F BAD4C9C5  AN9   DC    C':TIEKGITNEVRJ-PN'
8A73 C8C7C9D4
8A77 C5C3D8C5
8A7B C5AD0DCD
8A7F BAD4C9C5  ANA   DC    C':TIEKEINKAFTIEL-PN'
8A83 C8C7C9C5
8A87 C5C1C6D4
8A8B C5C5CCAD
8A8F D0CD
8A91 50000003  K1    DC    X'50000003'
8A95 50000004  K2    DC    X'50000004'
8A99 75F0000D  K3    DC    X'75F0000D'
8A9D 4B000007  K4    DC    X'4B000007'
8AA1 4A20000C  K5    DC    X'4A80000C'
8AA5 5F000007  K6    DC    X'5F000007'
8AA9 5BF8000C  K7    DC    X'5BF8000C'
8AAD 4DC0000A  K8    DC    X'4DC0000A'
8AB1 64000007  K9    DC    X'64000007'
8AB5 58000009  KA    DC    X'58000009'
8AB9 7D00000A  KB    DC    X'7D00000A'
8ABD 40000001  KC    DC    X'40000001'
8AC1 4C60000A  KD    DC    X'4C60000A'
8AC5 40000008  KE    DC    X'40000008'
8AC9 70000003  KF    DC    X'70000003'
8ACD 6B20000B  KK1   DC    X'6B20000B'
8AD1 5340000C  KK2   DC    X'5340000C'
8AD5 6EC00009  KK3   DC    X'6EC00009'
8AD9 7610000B  KK4   DC    X'7610000B'
8ADD 64800009  KK5   DC    X'64800009'
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8AE1 64000006  KK6   DC    X'64000006'
8AE5 71C00009  KK7   DC    X'71C00009'
8AE9 78E8000E  KK8   DC    X'78E8000E'
8AED 46000006  KK9   DC    X'46000006'
8AF1 5810000C  K1N   DC    X'5810000C'
8AF5 5060000A  K2N   DC    X'5060000A'
8AF9 775C8008  K3N   DC    X'775C8008'
8AFD 7D40000F  K4N   DC    X'7D40000F'
8B01 5C78000D  K5N   DC    X'5C78000D'
8B05 48D80010  K6N   DC    X'48D80010'
8B09 4E000006  K7N   DC    X'4E000006'
               *
8B0D 0000      RCE   DC    **
8B0F 0B              RO4
8B10 6E1B07          RTJ/  LOG
8B13 878AC5          LDX*  A'KE'
8B16 6E17D1          RTJ/  DVF
8B19 6E1A86          RTJ/  EXN
8B1C 63EF            JMP*  RCE
               *
               *
8B1E 0000      GE1   DC    **
8B20 E898            LDV   N1
8B22 878AB9          LDX*  A'KB'
8B25 6E1733          RTJ/  MLF
8B28 F292            STV   N1
8B2A E896            LDV   N2
8B2C 878AB9          LDX*  A'KB'
8B2F 6E1733          RTJ/  MLF
8B32 F296            STV   N2
8B34 63E8            JMP*  GE1
               *
               *
8B36 0000      GE2   DC    **
8B38 0A              RO3
8B39 E8CC            LDV   W03+1
8B3B 807C            LDX   ZTA
8B3D 63F7            JMP*  GE2
               *
               *
8B3F 0000      GE3   DC    **
8B41 6E11A9          RTJ/  ZV1
8B44 6E11A9          RTJ/  ZV1
8B47 6ECFF9          RTJ/  PRA
8B4A 6E0F97          RTJ/  PIE
8B4D 63F0            JMP*  GE3
               *
               *
8B4F 0000      GE4   DC    **
8B51 4E              TXA
8B52 A70031          ACA*  F'49'
8B55 4C              TAX
8B56 6E11A9          RTJ/  ZV1
8B59 6E0FA9          RTJ/  P30
8B5C 63F1            JMP*  GE4
               *
8B5E 0050      SPK   DS    80
8BAE 0004      CAS   DS    4
8BB2 0004      T17   DS    4
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8BB6 0000      CSA   DC    **
8BB8 4C              TAX
8BB9 EE8BAF          LDV/  CAS+1
8BBC F0D6            STA   V01
8BBE 4E              TXA
8BBF 80DA            LDX   V01
8BC1 63F3            JMP*  CSA
8BC3 0000      HUS   DC    **
8BC5 F0D8            STV   ZV1
8BC7 EE8AD1          LDV/  KK2
8BCA 878AD5          LDX*  A'K8'
8BCD 6E17D1          RTJ/  DVF
8BD0 F0DC            STV   ZV8
8BD2 870020          LDX*  A'T'
8BD5 6E1678          RTJ/  ADF
8BD8 870CD8          LDX*  A'ZV1'
8BDB 6E1733          RTJ/  MLF
8BDE 8700DC          LDX*  A'ZV8'
8BE1 6E1681          RTJ/  SBF
8BE4 F014            STV   TV
8BE6 63D0            JMP*  HUS
8BE8 0000      HU6   DC    **
8BEA 6E1170          RTJ/  VRZ
8BED 6E0BCE          RTJ/  NET
8BF0 63F6            JMP*  HU6
               *
8BF2 0000      OUT   DC    **
8BF4 06              RO1
8BF5 3800            OBE   0,0
8BF7 63F9            JMP*  OUT
8BF9 06              RO1
8BFA F90C            STV   BUF
8BFC 3183            IBA   1,3
8BFE DF0A            ANV*  X'A'
8C00 11FA            JAZ   *-4
8C02 E904            LDV   BUF
8C04 3903            OBA   0,3
8C06 63EA            JMP*  OUT
8C08 0001      BUF   DS    1
               *
               *
8C09 0000      P3H   DC    **
8C0B 0B              RO4
8C0C 807C            LDX   ZTA
8C0E E6A819          LDA/  TAB+85,X
8C11 87AFAF          LDX*  X'AFAF'
8C14 1711            JAX   S31
8C16 807C            LDX   ZTA
8C18 6E0DD8          RTJ/  POS
8C1B E6A819          LDA/  TAB+85,X
8C1E 87AFAF          LDX*  X'AFAF'
8C21 1704            JAX   S31
8C23 807C            LDX   ZTA
8C25 63E2            JMP*  P3H
8C27 EFAFAFAFAF S31  LDV*  X'AFAFAFAF'
8C2C 5608E8          JMP/  FRS
               *
               *
8C2F 0000      P4H   DC    **
```

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```
8C31 0B                     R04
8C32 807C                   LDX    ETA
8C34 E4A81D                 LDA/   TAB+29,X
8C37 87AFAF                 LDX=   X'AFAF'
8C3A 1711                   JAX    S41
8C3C 807C                   LDX    ETA
[illegible]                 RTJ/   POE
[illegible]                 LDA/   [illegible]
[illegible]                 LDX=   X'[illegible]'
[illegible]                 JAX    S01
[illegible]                 LDX    ETA
[illegible]                 JMP*   PSN
[illegible]      S41        LDV=   X'AFAFAFAF'
[illegible]                 JMP/   [illegible]
                 *
                 *
8C56 0000        PSN        DC     **
8C57 0B                     R04
8C58 807C                   LDX    ETA
8C5A E4A821                 LDA/   TAB+33,X
8C5D 87AFAF                 LDX=   X'AFAF'
8C60 1711                   JAX    S51
8C62 807C                   LDX    ETA
8C64 6E80DE                 RTJ/   POE
8C67 E4A821                 LDA/   TAB+33,X
8C6A 87AFAF                 LDX=   X'AFAF'
8C6D 170A                   JAX    S01
8C6F 807C                   LDX    ETA
8C71 63E8                   JMP*   PSN
8C73 E7AFAFAFAF  S51        LDV=   X'AFAFAFAF'
8C78 6400F8                 JMP/   PR8+16
                 *
                 *
8C7B 0000        PX1        DC     **
8C7D E4A800                 LDA/   TAB,X
8C80 87AFAF                 LDX=   X'AFAF'
8C83 1707                   JAX    SX1
8C85 807C                   LDX    ETA
8C87 E8A800                 LDV/   TAB,X
8C8A 63EF                   JMP*   PX1
8C8C 641387      SX1        JMP/   PR3
                 *
                 *
                 *
                 *
8C8F 08                     R01
8C90 87000A                 LDX=   10
8C93 E8ADAD      SPR        LDV/   AMB,X
8C96 6E8BF8                 RTJ/   OUT
8C99 48                     DCX
8C9A 1DF1                   NXN    SPR
8C9C 6E1170                 RTJ/   VRE
8C9F 6E1170                 RTJ/   VRE
8CA2 870000                 LDX=   0
8CA5 6E8DC1                 RTJ/   POE
8CA8 870030                 LDX=   X'30'
8CAB 6E8D87                 RTJ/   POA
8CAE FEA809                 STV/   TAB+9,X
8CB1 870040                 LDX=   X'40'
```

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```
8CB4 6E8D61                 RTJ/   POB
8CB7 FEA811                 STV/   TAB+17,X
8CBA 870018                 LDX=   X'18'
8CBD 6E8D61                 RTJ/   POB
8CC0 FEA815                 STV/   TAB+21,X
8CC3 870014                 LDX=   X'14'
8CC6 6E8D87                 RTJ/   POA
[illegible]                 STV/   TAB+[illegible],X
8CCC 870008                 LDX=   X'8'
8CCF 6E8D6B                 RTJ/   POC
8CD2 FEA819                 STV/   TAB+25,X
8CD5 870010                 LDX=   X'10'
8CD8 6E8D6B                 RTJ/   POC
[illegible]                 STV/   TAB+[illegible],X
8CDE 87000C                 LDX=   X'C'
8CE1 6E8D6B                 RTJ/   POC
8CE4 FEA821                 STV/   TAB+33,X
8CE7 870050                 LDX=   X'50'
8CEA 6E8D6B                 RTJ/   POC
8CED FEA82E                 STV/   TAB+46,X
8CF0 870058                 LDX=   X'58'
8CF3 6E8D75                 RTJ/   POD
8CF6 FEA839                 STV/   TAB+57,X
8CF9 87001C                 LDX=   X'1C'
8CFC 6E8D75                 RTJ/   POD
8CFF FEA83D                 STV/   TAB+61,X
8D02 87008A                 LDX=   X'8A'
8D05 6E8D75                 RTJ/   POD
8D08 FEA841                 STV/   TAB+65,X
8D0B 870080                 LDX=   X'80'
8D0E 6E8D75                 RTJ/   POD
8D11 FEA849                 STV/   TAB+49,X
8D14 87008C                 LDX=   X'8C'
8D17 6E8D75                 RTJ/   POD
8D1A FEA849                 STV/   TAB+73,X
8D1D 8700EA                 LDX=   X'EA'
8D20 6E8D6B                 RTJ/   POC
8D23 FEA851                 STV/   TAB+81,X
8D26 0D                     R04
8D27 E9E4                   LDV    AUB
8D29 6E06BA                 RTJ/   DEZ
8D2C 0D                     R04
8D2D E8CD                   LDV    W03+8
8D2F 807C                   LDX    ETA
8D31 FEA855                 STV/   TAB+85,X
8D34 88E8                   STX    EWX
8D36 08                     R01
8D37 6E1019                 RTJ/   K01
8D3A 80E8                   LDX    EWX
8D3C 887C                   STX    ETA
8D3E 6E10CB                 RTJ/   PT1
8D41 6E1170                 RTJ/   VRE
8D44 6E1049                 RTJ/   XOP
8D47 80E8                   LDX    EWX
8D49 887C                   STX    ETA
8D4B 6E1108                 RTJ/   PTR
8D4E 6E1170                 RTJ/   VRE
8D51 6E1170                 RTJ/   VRE
8D54 671870                 JMP*   PR1
```

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```
                 *
8D57 0000        POA        DC     **
8D59 6E8DB6                 RTJ/   PAB
8D5C 6E8D8D                 RTJ/   T81
8D5F 63F6                   JMP*   POA
                 *
8D61 0000        POB        DC     **
8D63 6E8DB6                 RTJ/   PAB
8D66 6E8D9B                 RTJ/   K31
8D69 63F6                   JMP*   POB
                 *
8D6B 0000        POC        DC     **
8D6D 6E8DB6                 RTJ/   PAB
8D70 6E8DA4                 RTJ/   K81
8D73 63F6                   JMP*   POC
                 *
8D75 0000        POD        DC     **
8D77 6E8DB6                 RTJ/   PAB
8D7A 6E8D7F                 RTJ/   T18
8D7D 63F6                   JMP*   POD
                 *
8D7F 0000        T18        DC     **
8D81 0A                     R03
8D82 E8D0                   LDV    W03+8
8D84 F8CC                   STV    W03+1
8D86 0B                     R04
8D87 E8CB                   LDV    W03
8D89 807C                   LDX    ETA
8D8B 63F8                   JMP*   T18
                 *
8D8D 0000        T81        DC     **
8D8F 0A                     R03
8D90 E8CF                   LDV    W03+4
8D92 F8CC                   STV    W03+1
8D94 0B                     R04
8D95 E8CB                   LDV    W03
8D97 807C                   LDX    ETA
8D99 63F8                   JMP*   T81
                 *
8D9B 0000        K31        DC     **
8D9D 0B                     R04
8D9E E8CE                   LDV    W03+3
8DA0 807C                   LDX    ETA
8DA2 63F9                   JMP*   K31
                 *
8DA4 0000        K81        DC     **
8DA6 0A                     R03
8DA7 E8CF                   LDV    W03+4
8DA9 807C                   LDX    ETA
8DAB 63F7                   JMP*   K81
                 *
8DAD BAC5DAD8    AMB        DC     C':ETREW :TIM'
8DB1 C5D7ADAE
8DB5 D4C9CD
                 *
                 *
                 *
8DB8 0000        PAB        DC     **
8DBA 0B                     R04
```

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```
8DBB EC                     LDV*
8DBC 6E06BA                 RTJ/   DEZ
8DBF 63F7                   JMP*   PAB
                 *
8DC1 0000        POE        DC     **
8DC3 887C                   STX    ETA
8DC5 87000D                 LDX=   X'D'
8DC8 88E8                   STX    EWX
8DCA 6E05CE                 RTJ/   MZT
8DCD 90E8                   MUL    EWX
8DCF 40                     TBX
8DD0 887C                   STX    ETA
8DD2 63ED                   JMP*   POE
                 *
8DD4 0000        POY        DC     **
8DD6 88D8                   STX    ZW1
8DD8 88DA                   STX    ZW1+8
8DDA 88E8                   STX    EWX
8DDC 887C                   STX    ETA
8DDE 63F4                   JMP*   POY
                 *
8DE0 0000        POG        DC     **
8DE2 807C        PRY        LDX    ETA
8DE4 6E07C4                 RTJ/   TPL
8DE7 6E8E03                 RTJ/   POI
8DEA 1FF6                   NAX    PRY
8DEC 63F2                   JMP*   POG
                 *
8DEE 0000        POH        DC     **
8DF0 09                     R02
8DF1 E8E8                   LDV    ZWX
8DF3 6E19D4                 RTJ/   CEF
8DF6 0B                     R04
8DF7 F8E4                   STV    ZW4
8DF9 E8D8                   LDV    ZW1
8DFB 8700E4                 LDX=   A'?W4'
8DFE 6E17D1                 RTJ/   DVF
8E01 63ED                   JMP*   POH
                 *
8E03 0000        POI        DC     **
8E05 8700D8                 LDX=   A'ZW1'
8E08 6E1678                 RTJ/   ADF
8E0B F8D8                   STV    ZW1
8E0D 6E05CE                 RTJ/   MZT
8E10 70E8                   IWM    ZWX
8E12 E4A800                 LDA/   TAB,X
8E15 87A0A0                 LDX=   X'A0A0'
8E18 63E9                   JMP*   POI
                 *
8E1A 0000        POK        DC     **
8E1C 870006                 LDX=   6
8E1F 887C                   STX    ETA
8E21 807C        PRE        LDX    ETA
8E23 6E0811                 RTJ/   LNF
8E26 6E8E03                 RTJ/   POI
8E29 1FF6                   NAX    PRE
8E2B 63ED                   JMP*   POK
                 *
8E2D 0000        POT        DC     **
```

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8E2F 6E8DD4          RTJ/  POF
8E30 6E8DE0          RTJ/  POG
8E33 6E8DEE          RTJ/  POH
8E36 63F3            JMP*  POT
                *
8E3A 0000       POV  DC    **
8E3C 6E8DD4          RTJ/  POF
8E3F 6E8E1A          RTJ/  POH
[illegible]
8E45 63F3            JMP*  POV
                *
8E47 0000       PNX  DC    **
8E49 870000          LDX*  0
8E4C 807C            STX   ZTA
[illegible]
8E50 E6A800          LDA/  TAB,X
8E53 87A0A0          LDX*  X'A0A0'
8E56 1705            JAX   RN1
8E58 6E0BCE          RTJ/  NET
8E5B 61F1            JMP   RNE
8E5D 607C       RN1  LDX   ZTA
8E5F 18D8            STX   ZVI
8E61 870000          LDX*  0
8E64 63E1            JMP*  PNX
                *
                *
8E66 0000       PNP  DC    **
8E68 08              RO1
8E69 807C            LDX   ZTA
8E6B EEA800          LDV/  TAB,X
8E6E 87FFA0          LDX*  X'FFA0'
8E71 1705            JAX   SN1
8E73 6E0BCE          RTJ/  NET
8E76 63EE            JMP*  PNP
8E78 0C         SN1  RO1
8E79 63ED            JMP*  PNP
                *
                *
8E7B 0000       NIP  DC    **
8E7D 0D              RO4
8E7E 807C            LDX   ZTA
8E80 EEA835          LDV/  TAB+53,X
8E83 6E06BA          RTJ/  DEZ
8E86 6E0F41          RTJ/  PO4
8E89 FEA835          STV/  TAB+53,X
8E8C 0A              RO3
8E8D E0C7            LDV   VO3+6
8E8F FEA836          STV/  TAB+54,X
8E92 6E0EC0          RTJ/  PN1
8E95 63EA            JMP*  NIP
                *
                *
8E97 0000       PGX  DC    **
8E99 6E8EE8          RTJ/  LNV
8E9C 6E0C01          RTJ/  PO3
8E9F 63F6            JMP*  PGX
                *
                *
8EA1 0000       PEX  DC    **


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8EA3 807C            LDX   ZTA
8EA5 E6A828          LDA/  TAB+40,X
8EA8 87AFAF          LDX*  X'AFAF'
8EAB 1750            SAX   SP4
8EAD 6E0976          RTJ/  ZLI
8EB0 E844            LDV   PL
[illegible]
8EB6 870000          LDX*  A'ZVI'
8EB9 6E17D1          RTJ/  DVF
8EBC F844            STV   PL
8EBD 870000          LDX*  A'VLZ'
8EC0 6E17D1          RTJ/  DVF
[illegible]
8EC6 6E1678          RTJ/  ADF
8EC9 F890            STV   L
8ECB EE8F8D          LDV/  VLZ
8ECE 87AAF3          LDX*  A'ZS'
8ED1 6E1733          RTJ/  MLF
8ED4 F848            STV   VPM
8ED6 E7AFAF          LDA*  X'AFAF'
8ED9 F048            STA   ML
8EDB 63C4            JMP*  PEX
8EDD 6E0000     SP4  RTJ/  PEI
8EE0 63BF            JMP*  PEX
                *
                *
8EE8 0000       LNV  DC    **
8EEA 870000          LDX*  0
8EED 807C            STX   ZTA
8EEF 807C       RN3  LDX   ZTA
8EE0 E6A828          LDA/  TAB+40,X
8EF2 87AFAF          LDX*  X'AFAF'
8EF1 1F06            NAX   RN4
8EF3 6E0BCE          RTJ/  NET
8EF6 61F1            JMP   RN3
8EF8 870000     RN4  LDX*  0
8EFB 88D8            STX   ZVI
8EFD 88DA            STX   ZVI+2
8EFF 88DC            STX   ZW2
8F01 88DE            STX   ZW2+2
8F03 6E07FC     SP3  RTJ/  LPF
8F06 6E0E11          RTJ/  LNF
8F09 E844            LDV   PL
8F0B 8700D8          LDX*  A'ZVI'
8F0E 6E8F31          RTJ/  ACI
8F11 E848            LDV   ML
8F13 6E8F3A          RTJ/  AC2
8F16 6E0BCE          RTJ/  NET
8F19 08              RO1
8F1A E6A800          LDV/  TAB,X
8F1D 87FFA0          LDX*  X'FFA0'
8F20 1FE1            NAX   SP3
8F22 0D              RO4
8F23 6E8F46          RTJ/  AC3
8F26 6E17D1          RTJ/  LVF
8F29 F90E            STV   VLZ
8F2B 63B6            JMP*  LNV
8F2D 0004       VLZ  DS    4
                *


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                *
8F31 0000       ACI  DC    **
8F33 6E1678          RTJ/  ADF
8F36 F8D6            STV   ZVI
8F38 63F7            JMP*  ACI
                *
                *
8F3A 0000       AC2  DC    **
8F3C 87008C          LDX*  A'ZW2'
8F3F 6E1678          RTJ/  ADF
8F42 F8DC            STV   ZW2
8F44 63F4            JMP*  AC2
                *
                *
8F46 0000       AC3  DC    **
8F48 E8D6            LDV   ZVI
8F4A 87008C          LDX*  A'ZW2'
8F4D 63F7            JMP*  AC3
                *
                *
8F4F F8C8       AC4  STV   VO3
8F51 F8CE            STV   VO3+3
8F53 F8D1            STV   VO3+6
8F55 6706BA          JMP*  DEZ
                *
                *
8F58 0000       HAS  DC    **
8F5A E0D4            LDA   ZSP
8F5C A70016          ADA*  F'02'
8F5F F0D4            STA   ZSP
8F61 63F5            JMP*  HAS
                *
8F63 0000       PRX  DC    **
8F65 EEA861          LDV/  TAB+97,X
8F68 6E8DF8          RTJ/  OUT
8F6B EEA862          LDV/  TAB+98,X
8F6E 6E8DF8          RTJ/  OUT
8F71 63F0            JMP*  PRX
                *
                *
8F73 0000       NLZ  DC    **
8F75 80D4            LDX   ZSP
8F77 E69FFE          LDA/  SPZ+2,X
8F7A 807C            LDX   ZTA
8F7C F6A861          STA/  TAB+97,X
8F7F 08              RO1
8F80 FEA800          STV/  TAB,X
8F83 63EE            JMP*  NLZ
                *
8F85 0000       ZNR  DC    **          ZEILE NR IN TAB
8F87 F6A861          STA/  TAB+97,X
8F8A FEA800          STV/  TAB,X
8F8D 63F6            JMP*  ZNR
                *
8F8F 0000       IXI  DC    **
8F91 6E11A9          RTJ/  ZVI
8F94 44              INX
8F95 63F8            JMP*  IXI
                *


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8F97 0000       PIX  DC    **
8F99 6E11BA          RTJ/  PRT
8F9C 6E11A9          RTJ/  ZVI
8F9F 63F6            JMP*  PIX
                *
8FA1 0000       IX2  DC    **
8FA3 6E8F63          RTJ/  PRX
8FA6 44              INX
8FA7 63F8            JMP*  IX2
                *
8FA9 0000       P30  DC    **
8FAB 6E0F8F          RTJ/  PR3
8FAE 6E11A9          RTJ/  ZVI
8FB1 63F6            JMP*  P30
                *
8FB3 0000       PX2  DC    **
8FB5 F0D6            STA   ZVI
8FB7 F0E0            STA   ZWX
8FB9 F0E0            STA   ZV3
8FBB 63F6            JMP*  PX2
                *
8FBD 0000       PX3  DC    **
8FBF 6E1678          RTJ/  ADF
8FC2 70E0            STV   ZV3
8FC4 63F7            JMP*  PX3
                *
8FC6 0000            END   AN

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13. ABSTRACT

The investigations continued during the reporting period essentially as described in preceding reports. The objectives were:
a. To shield the cable car telemetry systems against all effects of the weather and to obtain by them homogeneous series of recordings;
b. to develop and apply the physical and mathematical bases for the complete numeric evaluation of the recording runs, up to and including computation of the incremental exchange coefficients;
c. to continually record at the three stations the Aitken nuclei concentrations, natural radioactivity (RaB, RaC), and polar conductivities, and to utilize them in the evaluations; and
d. to derive initial deductions from the results.
The entire evaluation technique was completely changed. A new computer (Intertechnique Multi 8) with 12 k words (1 word = 9 bit) affords us the possibility to perform the entirety of all computation processes in one single operation, and to print them out in tables.

Key words:
Aerosol; gradient; troposphere; boundary layer; exchange coefficient.